

WORKING PAPER #2
Draft Opportunities and Challenges

General Plan Steering Committee

Joe Kornder, Co-Chair

Jamie McLeod, Co-Chair

Thomas Banholzer

Dixie Baus

Michele Beasley

Brian Brennan

David Delozier

Patricia Finnigan Biocini

Todd Fitch

Ray Hashimoto

Joe Head

Jerry Marsalli

Teresa O'Neill

Alice Pivacek

Kevin Park

Amisha Patel

Andy Ratermann

Ed Richards

Peter Yoon

Prepared by

DYETT & BHATIA Urban and Regional Planners

Fehr & Peers Associates

Jones & Stokes

City of Santa Clara General Plan and Zoning Code Update

WORKING PAPER #2

Opportunities and Challenges

Table of Contents

Exe	ecutiv	re SummaryPurpose	
		Key Findings	
1	Intr	roduction and Purpose	I
	1,1	Purpose of the General Plan Update Scope of the General Plan Public Input	I-2
	1.2	Regional Location and Planning Boundaries	1-4
	1.3	Report Organization	I-4
	1.4	Next Steps	1-7
2	Lan	ıd Use	2- I
	2.1	City of Santa Clara Existing Plans	2-1
	2.2	City of Santa Clara Current Planning Efforts Station Area Plan Downtown Plan	2-2
	2.3	Adjacent Area and Regional Plans Adjacent city and Area Plans Regional Plans	2-4
	2.4	Current Land Use Pattern Overall Pattern Distribution of Uses Mixed-Use Development	2-6 2-13
	2.5	Densities and Intensities Existing Densities and Intensities of Development	2-17
	2.6	Major Development Projects and Trends	2-22 2-22 2-23

	2.7	Vacant Land and Reuse Opportunities	2-23
		Key Opportunity Areas	2-2 4
		Vacant and Underutilized Parcels	2-3
		Sources	2-35
3	Cor	mmunity Design and Historic Preservation	3-1
	3.1	City Form	3-1
		Evolution of City Form	3-1
		Overall City Structure	3-2
	3.2	City Identity	3-7
		Existing Heights	
		Scale and Density	
		Gateways	3-10
	3.3	Commercial Corridors	3-13
		El Camino Real	
		Stevens Creek Boulevard	
		Typical Development Patterns Along Commercial Corridors	3-14
	3.4	Accessibility and the Public Realm	3-16
		Connectivity and Walkability	3-16
		Public Realm: Parks, Schools, and Walkable Centers	3-19
	3.5	Historic Resources and Programs	3-19
		Historic Resources	3-20
4	Tra	nsportation Systems and Circulation	4- I
	4.1	Recent Trends and Planning Efforts	4-1
		Policy Framework	4-1
		Regulatory Framework	
		Recent Trends	
		Travel Modes	4-2
	4.2	Street Hierarchy and Classifications	4-4
	4.3	Traffic Conditions and Levels of Service	4-8
	4.4	Pedestrian Circulation	4-13
	4.5	Bicycle Movement	4-13
	4.6	Public Transit	4-17
	4.7	Rail and Freight Movement	4-18

5	Par	ks, Recreation, and Open Space	5-1
	5.1	Existing Facilities	5-1
		Parks and Recreation Facilities	5- ł
		Other Park and Recreation Facilities	5-5
	5.2	Standards	5-6
		Overall Supply	5- 6
		Distribution	5- <i>6</i>
		Recent Trends and Improvements	5-7
	5.3	Deficiencies and Planned Improvements	5-8
		Deficiencies	5-8
		Planned Improvements	5-8
6	Pub	olic Facilities	6-1
	6. l	Schools and Education	6-1
		Student Population	
		Private K-12 Schools	6- 6
		Higher Education	6-6
	6.2	Libraries	6-7
	6.3	Safety Services	6-8
		Police	6-8
	6.4	Other Civic Facilities	6-11
		Museums	6-11
		Arts and Culture Facilities	6-12
		Convention Center	6-12
		Public and Social Services	6-12
7	Env	rironmental Resources	7-1
	7.1	Geology, Soils, and Seismicity	7-1
		Regulatory Environment	7-1
		Existing Conditions	
		Implications for Land Use	7-11
		Alquist-Priolo Act, Seismic Hazards Mapping Act, and Other State Seismic Safety	
		Requirements	7-12
	7.2	Hydrology and Water resources	7-14
		Regulatory Environment	7-14
		Existing Conditions	7-15
	7.3	Biological Resources	7-20
		Regulatory Environment	
		Existing Conditions	7-21
		Special Status Species	7-22

SANTA CLARA GENERAL PLAN AND ZONING UPDATE

	7.4	Energy and Mineral Resources	7-28
		Regulatory Environment	7-28
		Existing Conditions	
	7.5	Hazardous Materials	7-33
		Regulatory Environment	7-33
		Existing Conditions	7-34
		Sources	7-37
8	Noi	ise	8-1
	8.1	Regulatory Environment	8-1
		Implications For Land Use	
	8.2	Existing Conditions	8-2
		Noise-Sensitive Areas in the City	
		Existing Ambient Noise Conditions	
		Major Noise Sources	8-8
		Implications For Land Use	8-12
		Sources	8-13
9	Sus	stainability	9- I
	9.1	Definition of Sustainability	9-1
		Ecology	9-1
		Economy	9-2
		Equity	9-2
		Global Climate Change	9-2
		Greenhouse Gases	9-3
	9.2	Sustainability in Santa Clara	9-3
		Current Policies and Programs	9-5
Apı	oendi	ix A: Environmental Terminology	Α-Ι

List of Figures

Figure 1-1	Regional Context	1-5
Figure 1-2	Subregional Context	I-6
Figure 2-1	Station Area Plan	2-3
Figure 2-2	Downtown Plan	2-3
Figure 2-3	Aerial	2-9
Figure 2-4	Existing Land Use	2-
Figure 2-5	Existing Densities and Intensities	2-19
Figure 2-6	Recent, Approved and Potential Development	2-25
Figure 2-7	Vacant Land and Reuse Opportunities	2-33
Figure 3-1	City Form	3-3
Figure 3-2	City Structure	3-5
Figure 3-3	Scale and Density Comparison	3-11
Figure 3-6	Large-Scale Community Commercial Parcels	3-14
Figure 3-7	Medium Parcels	3-15
Figure 3-8	Small Parcels	3-15
Figure 3-9	Accessibility and Public Realm	3- 7
Figure 3-10	Architecturally Significant and Historic Properties in the Old Quad	3-21
Figure 4-1	Road Class	4-5
Figure 4-2	ADT's	4-9
Figure 4-4	Existing Bicycle Facilities	4-15
Figure 4-5	ExistingTransit Service	4-19
Figure 6-1	Schools and School Districts	6-3
Figure 6-2	Public Facilities	6-9
Figure 7-1	Geology	7-3
Figure 7-2	Soils	7-7
Figure 7-3	Compressible Soils	7-9
Figure 7-4	Liquefaction Susceptibility	7-17
Figure 7-5	Hazardous Materials	7-38
Figure 8-1	Noise Monitoring Locations	8-5
Figure 8-2	Daily Trend in Noise Levels at Location LT-1	8-6
Figure 8-3	Daily Trend in Noise Levels at Location LT-2	8-7
Figure 8-4	65 dB CNEL Noise Contours for Year 2010	8-11

List of Tables

Table 2-1	Land Use (2008)	2-8
Table 2-2	Housing Units, by Type (2008)	2-15
Table 2-3	Non-Residential Building Square Feet, by Land Use (2008)	2-15
Table 2-4	Average FAR of Non-Residential Land Uses	2-27
Table 2-5	Residential Land Use Trends	2-29
Table 2-6	Non-Residential Land Use Trends	2-30
Table 3-1	Maximum Building Heights as Defined in Section 2.4 of the General Plan	3-9
Table 4-1	Journey to Work Travel Characteristics	4-3
Table 4-2	Home Based Work Trips	4-3
Table 4-3	Signalized Intersection Level of Service Definitions	4-11
Table 4-4	Existing Conditions Intersection Levels of Service	4-12
Table 5-1	Existing Parks and Recreation Facilities	5-3
Table 6-1	District Enrollment by Ethnicity, 2006-2007 School Year	6-2
Table 6-2	Santa Clara Unified School District Schools: Current Enrollment and Capacity	6-5
Table 7-1	Maximum Credible Earthquake and Recurrence Interval for Major Faults in the	
	Vicinity of the City	7-6
Table 7-2	Requirements for Lead Agencies under the Alquist-Priolo Act and Seismic	
	Hazards Mapping Act	7-13
Table 7-3	Principal Santa Clara Area Streams—Beneficial Uses and Known Impairments	7-19
Table 7-5	Special-Status Plant Species Recorded in San José West and Milpitas Minute	
	Quadrangles	7-23
Table 7-6	Special-Status Wildlife Species Recorded in the San José West and Milpitas Minu	te
	Quadrangles	7-24
Table 7-7	Silicon Valley Power Generation Resources	7-31
Table 7-9	Facility Permit Type	7-34
Table 7-10	Generator, TSD, and Transport Facilities in City of Santa Clara	7-35
Table 7-11	Storage Tank Sites in City of Santa Clara	7-36
Table 7-12	Hazardous Materials Sites in City of Santa Clara	7-37
Table 8-1	Short-Term Noise Measurement Results	8-4
Table 8-2	Existing Vehicular Traffic Noise Levels for Major Roadways in Santa Clara	8-9

Executive Summary

PURPOSE

This Working Paper on Opportunities and Challenges is an evaluation of existing conditions, opportunities, and constraints. The report represents a technical analysis of land use, transportation, and environmental conditions. This report is not a policy document that requires City Council approval. Results of public participation efforts, including community workshops and stakeholder meetings, are referenced in this report, but described fully in four separate publications. This analysis and key findings will be used to inform the preparation of land use alternatives and, ultimately, the General Plan Update. A separate working paper documents existing conditions and opportunities relating to demographic and market conditions.

KEY FINDINGS

Eight chapters follow the introduction, describing existing conditions for key topics in the General Plan. These findings are summarized below.

Land Use

The Land Use chapter evaluates the City's current land use pattern and trends. The chapter describes current large planning efforts, including the Station Area Plan and Downtown Plan, as well as large projects, such as the planned BAREC residential development, as well as plans of adjacent jurisdictions.

Residential is the most prevalent land use, comprising nearly 42 percent of all net (exclusive of streets and other rights-of-way) land acreage. Although a third of all residential uses are lowdensity units (less than eight units per acre), since 2000 more multifamily units have been built than any other housing type. Similarly, non-residential developments are being developed at higher intensities, many with structured or below-grade parking.

A large amount of non-residential development is currently underway in the City, including nearly 12 million square feet of office space proposed or approved—an increase of almost 80 percent. In addition to office space, data center space is on the rise. These centers house data servers and are characterized by low employment densities and high energy use.

Only 136 acres of land within the City is vacant. One of the key issues that the General Plan Update will contend with is the amount of new growth the City should add over the next 25 years and where that development should be located, especially with regional projections indicating large amounts of potential growth for the City. Potential land uses and key areas identified so far in the process (both through community outreach and analysis of existing conditions) include mixed-use development and commercial intensification along El Camino Real and residential and mixed-use development in the Station Area and Downtown Santa Clara. Technical analysis also indicates prevalence of underutilized sites spread out in many other non-residential areas of the City.

Community Design

Community design stems from a combination of Santa Clara's physical features—such as connectivity, block size, and streetscape—and historic characteristics associated with the City's architectural and urban legacy as the Mission City. Santa Clara is characterized by well-defined land use areas: residential neighborhoods and commercial corridors south of the Caltrain tracks, an industrial core between the tracks and U.S. 101, and office uses and new residential neighborhoods north of U.S. 101 to the west and east, respectively. Key landmarks and gateways in the City include its commercial corridors—opportunities for improvement are identified through analysis of both streetscape and land use characteristics.

The Community Design chapter explores several issues that may be addressed in the General Plan Update, including improving connectivity, walkability and accessibility to the public realm (e.g. parks, schools, and neighborhood centers) as well as aspects of scale and density that may influence the way new development is integrated into existing neighborhoods and surroundings.

Transportation Systems and Circulation

The Transportation Systems and Circulation chapter discusses the various modes of transportation in the City, as well as recent trends and opportunities. Automobiles are the most prevalent mode of travel, with 78 percent of residents driving alone to work. Traffic counts collected specifically for this report and other data show that all but three of the City's major intersections are currently operating at LOS D or better during both the AM and PM peak hours. (LOS D is the City's minimum acceptable level of service.) As new development is incorporated into the City's existing traffic network, the City will need to address potential impacts to level of service both through mitigation and reexamination of LOS standards for key intersections.

The chapter describes current City policies to promote and enhance pedestrian and bicycle facilities in order to increase safety and usage. Lastly, the chapter reports on the range of public transit options, including Caltrain, Altamont Community Express, Capitol Corridor, paratransit service, VTA buses and light rail, and the proposed BART extension. The City will have an opportunity to reflect on these existing conditions and input from public outreach efforts to develop General Plan policies for circulation.

Parks and Open Space

The City provides a breadth of parks, recreation facilities, open spaces, and trails. In recent years, several new parks and the Ulistac Nature Area have been added to the north side of the City. Currently, Santa Clara provides approximately 4.7 acres of overall parkland and recreation facilities for every 1,000 residents, including 2.4 acres of neighborhood parks for every 1,000 residents.

As with other public services, a key challenge will be to continue providing a high level of service as the City's population grows. This is particularly difficult given the City's limited land supply. Recently constructed and approved developments underline this challenge, as several projects have provided less than the prevalent park acreage. In order to maintain the current ratio of 4.7 acres per 1,000 residents for the regionally projected population increase by 2035, the City would have to add another 144 acres of parkland over the planning period, for a total

of 686 acres. Whether the City should establish formal park standards for new development (to be provided through dedication or payment of in lieu fees) will also need to be considered.

Public Facilities

The Public Facilities chapter describes schools and public facilities and services within Santa Clara. Santa Clara Unified School District (SCUSD) is the primary school district serving approximately 14,400 students in the City. School enrollment has increased in recent years and is expected to increase in the future, as new projects in Santa Clara and North San José are completed. Moreover, high schools in the District are already over capacity. SCUSD has plans to add four new schools. Institutions of higher education are also planning for growth: Santa Clara University is looking to increase on-campus student housing, while Mission College has developed a new master plan which includes redevelopment of its main building.

The City provides a broad array of public facilities and services. As the City continues to grow, it will need to enhance these to maintain the high level and quality of services to residents and businesses; for instance, the City has two well-attended libraries, though parking is limited at the Central Library and patrons are requesting additional facilities. Police and fire services are currently adequate, but will need to be increased as new residents are added.

Environmental Resources

The Environmental Resources chapter describes the City's natural resources and their implications for the planning process. Topics include: geology, soils, and seismicity; hydrology and water resources; biological resources; mineral and energy resources, and energy consumption; and hazardous materials and related issues. Each section includes an overview of State, federal and local policies and regulations that are relevant to each environmental topic. In general, no significant constraints were identified that would impede growth, although environmental considerations would need to be reflected in new developments. This analysis will be used to inform both the General Plan Update and the EIR.

Noise

The Noise chapter describes noise conditions in Santa Clara and their implications of current land uses. Noise monitoring studies at selected locations were carried out in the City. Significant noise sources in the City include major roadways, the Norman Y. Mineta International Airport, as well as railroad operations. The chapter identifies noise-sensitive areas and potential land use conflicts: including residential uses near the airport, railroad tracks, roadways, and industrial uses. The chapter describes existing mitigations, particularly sound walls, and recommends other sound control measures to reduce land use conflicts. Mitigations will be explored fully as part of the General Plan Update.

Sustainability

The Sustainability chapter defines what sustainability means for the City and how it can be incorporated into the General Plan Update. The chapter also reviews existing programs and policies that the City and its public utility, Silicon Valley Power, currently have underway. Santa Clara has been a leader in sustainable innovation: from renewable energy and recycled water systems to rebates and incentives for energy efficiency and green building. The City has demonstrated a commitment to improving and expanding its sustainability programs through regional collaboration efforts; renewable energy use and production; water conservation; recycling; open space and vegetation; and transit-oriented/walkable development.

Introduction and Purpose

1.1 PURPOSE OF THE GENERAL PLAN UPDATE

The State of California requires every city and county to have a comprehensive General Plan that serves as a constitution for long-term physical development. The General Plan identifies current and future needs in areas such as land use, housing, transportation, public services, environmental quality, and economic viability. The General Plan is also a policy document that embodies the community's goals and guides decisions about physical development over the long term.

Santa Clara, located at the center of California's Silicon Valley, covers an area of 18.2 square miles. The City is situated between San José and the San Francisco Bay to the north, east, and south, and Sunnyvale and Cupertino to the west. Additionally, the Norman Y. Mineta International Airport borders the City to the east. Santa Clara was founded in 1777, incorporated in 1852, and became State-chartered by 1862. The City is the site of one of California's 21 missions and is home to Santa Clara University, the oldest institution of higher learning in California. Once an agricultural town, Santa Clara today is home to major corporations such as Intel, Applied Materials, Sun Microsystems, Nvidia, and Agilent Technologies, as well as Great America-one of the largest entertainment venues in the Bay Area.







Santa Clara is both one of the oldest and the newest communities in the Bay Area, boasting historic buildings in the Old Quad, a thriving business and R&D sector, and regional entertainment.

Santa Clara's current General Plan was last comprehensively updated in 1992. Since 1992, the City's population has increased by 21 percent, while employment had a significant surge followed by a decrease after the dot-com collapse in the early 2000s. However, employment generation is again on the rise, and the City is projected to attain an additional 50,000 new jobs over the next 25 years (an increase of roughly 47 percent from 2008). Population growth is also expected to increase during this period, and is projected to reach 146,100—an increase of over 26 percent from 2008 to 2035.

Growth in population and employment uses over the past two decades has led to many distinct physical changes in the City. There are numerous new buildings and homes, especially in the northern half of the City. Several recreational centers have been added to the City, as well as a

new trail system along San Tomas Creek. New shopping centers—Santa Clara Mercado Center and Rivermark—constructed in the last decade have become major destinations within Santa Clara and for neighboring cities. New corporate campuses have also been developed during this time frame, including Sun Microsystems, Intel, and Nvidia. However, with this new development, the City has limited its potential to physically expand, thus growth will likely be from reuse of existing sites rather than expansion.

Serving growth in the City, Santa Clara's circulation system of expressways and arterials provides efficient access to employment centers and new development from key regional transportation corridors like Highways U.S. 101 and SR 237, and Interstates 880 and 280. Transit access into the City is more limited, but future plans include several key improvements: the existing Transit Center that currently serves Caltrain, ACE, Capitols, and VTA bus lines will incorporate a new BART Station and Automated People Mover to and from the Norman Y. Mineta International Airport. A new pedestrian bridge connecting the expanded Transit Center and BART Station will also further improve access for the community.

Santa Clara's current General Plan recognized that 'the City's changing economic and employment base would have major implications, but did not anticipate the dramatic fluctuation of market conditions and the larger metropolitan context for the City over the past 10 years. The process of drafting a new General Plan provides residents with an opportunity to step back, assess opportunities and challenges, establish a vision for the City's future, and outline a systematic process to move forward. Preparation of the General Plan is far more than a legal formality—it is an opportunity for citizens to define their community's future, and a quality of life now and for subsequent generations.

Looking ahead, Santa Clara needs to identify how and where it will grow and to define the City's sense of place. The challenge is to craft a plan that will allow the City to continue to make dynamic decisions that have contributed to its remarkable progress and broader community objectives. Issues related to sustainability, pedestrian-orientation, livability, and services need to be examined, in line with the community's stated priorities, to ensure the continued growth, vitality and preservation of the City. An overall vision will provide a framework for policies and a clear path for their implementation. Such policies provide the basis for regulations that can then be included in the Zoning Code, Capital Improvements Program (CIP) and other implementation tools.

SCOPE OF THE GENERAL PLAN

The new General Plan, when adopted by the City Council, will govern all subsequent City actions relating to Santa Clara's physical development. The General Plan is mandated by and derives its authority from California Government Code Section 65300, which requires each city and county in California to adopt a General Plan, "for the physical development of the county or city, and any land outside its boundaries which...bears relation to its planning." (See section 1.2: Regional Location and Planning Boundaries.) Although the law allows jurisdictions a great deal of flexibility in General Plan preparation, planning law requires seven mandatory elements to be addressed. These are land use, transportation, housing, conservation, open space, noise, and safety. In addition to these statutory elements, jurisdictions may also adopt optional elements that relate to their physical development; these have the same force and effect as the statutory elements.

The General Plan Update will cover all of the mandated elements in an integrated document. In addition, the Housing Element, which was last adopted in 2002, is being updated separately as it is based on a different timeline. The Housing Element will then be an appendix to the updated General Plan. The General Plan will also include community design, historic preservation, and sustainability. State law requires that the General Plan be:

- Long Range. The General Plan must be a long range document addressing future development within the community, generally within a 20- to 25-year timeframe.
- Comprehensive. The General Plan must encompass the entire Planning Area, and address the full range of issues associated with the City's physical development.
- Internally Consistent. Mandatory and optional elements must be consistent with one another, and each element has equal legal status. Additionally, principles, goals, objectives, policies, and plan proposals set forth in an area or community plan must be consistent with the overall General Plan.

PUBLIC INPUT

The General Plan is a policy document that implements the vision of the community. Therefore, a public input program is an important part of this process. Opportunities for public input have been designed to allow the planning team to learn directly from City residents, business and property owners, and other community members about their needs and values, as well as to allow the public to provide feedback throughout the phases of the planning process.

During the first phase of the project, the planning team conducted two initial community visioning workshops in June 2008 at which nearly 130 people were in attendance. The team also met with representative stakeholders, such as residents, businesses owners, developers, schools personnel, City officials and public commission members. Input received through these outreach efforts has provided the framework for issues that were addressed in this document.







Community workshops are an essential part of the General Plan Update process. During the first set of workshops, participants shared their visions for Santa Clara in 2035.

As the project moves forward, the community will continue to have opportunities to participate through public workshops, General Plan Update Steering Committee meetings, and other public forums. Details on public events, the progress of the Plan, minutes of the Steering Committee, and contact information are available at the general plan website: www.santaclaragp.com.

REGIONAL LOCATION AND PLANNING BOUNDARIES 1.2

Santa Clara is located at the south end of the San Francisco Bay in Santa Clara County, bordered by the City of San José to the north, east and south, and Sunnyvale and Cupertino to the west, U.S. 101 passes east-west through the center of the City, while SR 237 borders the north, and Interstates 880 and 280 skirt the southeast and southwest corners of the City, respectively. Figures 1-1 and 1-2 illustrate the City's 18.2-square-mile footprint within the regional context of the Bay Area and the South Bay, respectively. Since the City is bounded completely by other jurisdictions, coordination with adjacent city governments will need to be integrated into the General Plan update process.

1.3 REPORT ORGANIZATION

This Opportunities and Challenges Assessment is a key step in the process of preparing the new General Plan for Santa Clara. It provides baseline information on existing conditions in the City, focusing on its physical environment and built form. It also describes opportunities, challenges, and preliminary planning issues that will be considered further in subsequent steps of the General Plan process.

Specifically, this report will be used as the basis for:

- Preparing alternative land use and transportation plans (Alternatives);
- Policy formulation for the new General Plan; and
- The Environmental Impact Report (EIR) to be prepared for the Draft General Plan elements.

Each chapter in the report includes background information, an analysis of the information for its pertinence to the General Plan Update and associated policy implications. The chapters focus upon the following subjects:

- Land Use
- Community Design and Historic Preservation
- Transportation Systems and Circulation
- Parks, Recreation, and Open Space
- **Public Facilities**
- **Environmental Resources and Challenges**
- Noise
- Sustainability

Figure 1-1: Regional Context

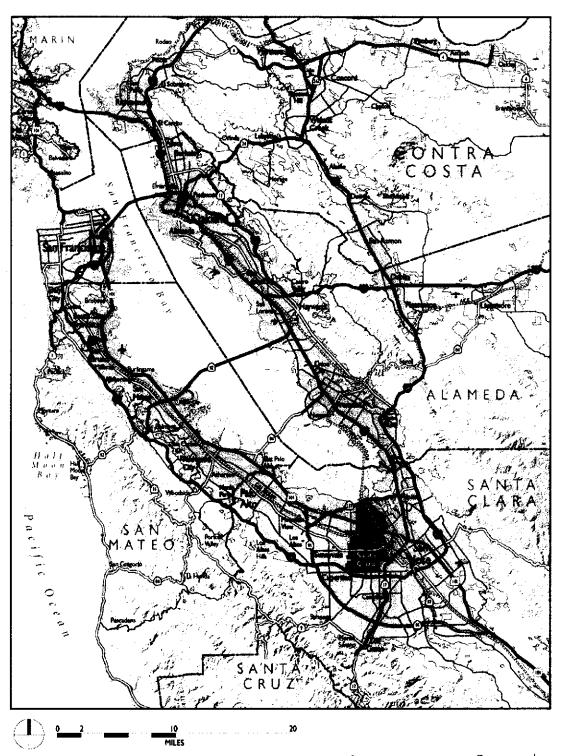
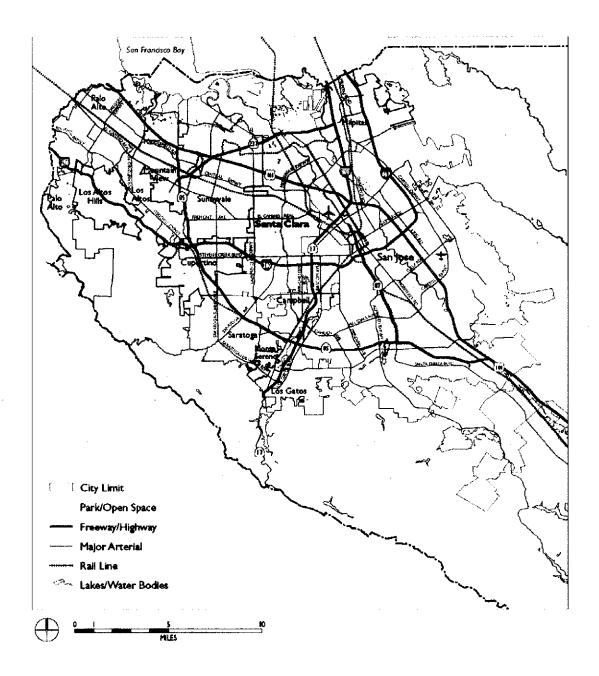


Figure 1-2: Subregional Context



1.4 **NEXT STEPS**

This Opportunities and Challenges Report concludes the research and analysis phase of the project. Following review of this report, the project team will work with the community and Steering Committee to prepare several alternative sketch plans. These alternatives will be based on the Stakeholder Interviews; the Community Visioning Workshops on June 21 and 23, 2008; the results of a future mail-in survey which will be sent out prior to the alternatives process; the issues and options identified in this report; and an additional Community Workshop on the Alternatives in October, 2008.

Following the alternatives process, a preferred alternative will be developed and work on the Draft General Plan will begin. The Draft General Plan will include goals, policies and implementation strategies. The City's Zoning Code—which regulates and defines what happens on individual properties—will also be revised to be consistent with the new General Plan, to ensure that visions and policies are carried through. A comprehensive Environmental Impact Report will also be prepared along with the General Plan and Zoning Code updates, pursuant to the California Environmental Quality Act (CEQA).

Public meetings and workshops will be held throughout this process in order to maintain ongoing communication and feedback with the community. After comments from the Steering Committee and decision makers have been reviewed and incorporated into the draft versions of the General Plan, Zoning Code, and EIR, these documents will be distributed for public review. Public workshops and an "open house" will allow members of the Santa Clara community to ask questions about and offer comments on these documents. Following public review, the EIR will be certified and the updated General Plan and Zoning Code will then be adopted by the City Council.

SANITA	CLARA	GENERAL	PLAN AND	TONING	LIPDATE
JAINIA	CLAINN	CENERAL	I LAN AND	LUMING	OFURIE

This page intentionally left blank.



Land Use

How land is used is perhaps the most crucial element of any general plan. This chapter examines the land use development of the City through its existing land use patterns and trends. A comprehensive GIS (geographic information systems) parcel-based database was developed to facilitate this analysis. Specific topics covered in this investigation include a review of the City's residential density and intensity of non-residential development, potential sites for future change, and other factors that may influence Santa Clara's present and future land uses.

2.1 CITY OF SANTA CLARA EXISTING PLANS

GENERAL PLAN

The City last underwent a comprehensive General Plan Update in 1992. The current General Plan reports existing conditions, policies and implementation measures for several major areas: Land Use, Housing, Transportation, Environmental Quality, and Public Facilities and Services. These areas reflect the seven elements required by the State. The Housing Element, which has a separate schedule and planning horizon, was updated more recently in 2002.

The current General Plan identifies several major themes and objectives:

- Prioritize the development and redevelopment of underutilized properties other than those planned and zoned for single-family residential.
- Ensure the diversity of industrial uses in the City's heavy industrial area on the east side of the City.
- Designate mixed-use sites to encourage more residential development in areas accessible to transit, commercial, and public services.
- Expand the variety of housing types to accommodate households with different income levels and the demand for rental and ownership units to serve seniors, first-time homebuyers, and the homeless.
- Enhance alternative transportation modes to ensure a safe, convenient, and efficient circulation system, particularly for youth, elderly, persons with disabilities and others who tend not to drive cars.
- Preserve environmental quality, through measures to improve open space and landscaping, water use, noise reduction, hazardous materials regulations, air quality, protection of endangered species and habitat, and protection from hazards.
- Provide efficient public facilities, including educational, recreational and cultural opportunities as well as services, such as recycling and emergency response.

ZONING CODE

A detailed evaluation of the Santa Clara Zoning Code will be undertaken as a part of the comprehensive update. The Code is comprised of several major components that have influenced the development of Santa Clara's urban form over time. Residential uses are permitted in ten zoning districts. The City's mixed-use combining districts permit a range of housing types and densities, up to 45 units per acre. Non-residential zoning categories in the City include commercial, office, and industrial districts. The commercial districts are cumulative, such that uses permitted in the lower-order district are also permitted in any successive district. The Zoning Code also identifies overlay and combining districts. These zones allow more flexibility for mixing land uses and create a process for large-scale and master-planned development projects. In general, development constraints, such as residential densities, are determined by the underlying General Plan designation and zoning district.

2.2 CITY OF SANTA CLARA CURRENT PLANNING EFFORTS

STATION AREA PLAN

A plan for 432 acres of land surrounding the Santa Clara Transit Center and future BART Station is a result of a partnership between the Cities of San José and Santa Clara, and the Santa Clara Valley Transportation Authority (VTA) (Figure 2-1). A historic landmark in Santa Clara, the existing Transit Center is currently served by Caltrain, Altamont Commuter Express (ACE), and VTA bus lines. Additionally, future plans call for an Automated People Mover system that would connect Norman Y. Mineta International Airport with both the Transit Center and VTA's Metro/Airport light rail station. Finally, a major effort is currently underway to extend BART from Fremont to Silicon Valley, with the Santa Clara Transit Center forming the terminus of this extension. With direct rail service to virtually all parts of the San Francisco Bay Area and beyond, the expanded Transit Center will emerge as a key intermodal hub in the region.

The Station Area Plan will provide a foundation for the development and revitalization of this area, fostering a dynamic social and economic environment by cultivating a wide spectrum of uses, including housing, live/work units, offices, stores, hotels, restaurants, parks, and other amenities. As a whole, the Plan proposes just under five million square feet of new non-residential development and 2,250 new housing units. Approximately 2.7 million square feet and 1,660 housing units are planned within the City of Santa Clara.

A Public Review Draft of the Plan was released in July 2008. Preparation of the EIR on the Plan is underway. The Plan is expected to reach decision-makers for consideration in early 2009.

DOWNTOWN PLAN

The City has prioritized the revitalization of Santa Clara's historic downtown by initiating a Downtown Plan (see Figure 2-2), which covers the "superblock" site. The vision for this area is an urban mixed-use center that includes the construction of over 129,000 square feet of commercial space, and 400 residential units on 7.3 acres. The project could include four floors of residential development above retail stores and up to eight floors at the intersection of extended Franklin and Washington Streets. At least one parking structure is being contemplated. The Plan also recommends street changes in the downtown area that would be

Figure 2-1 Station Area Plan

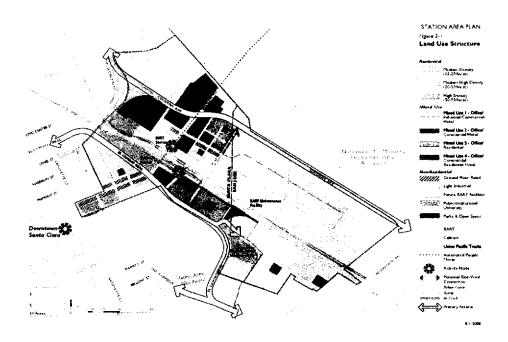
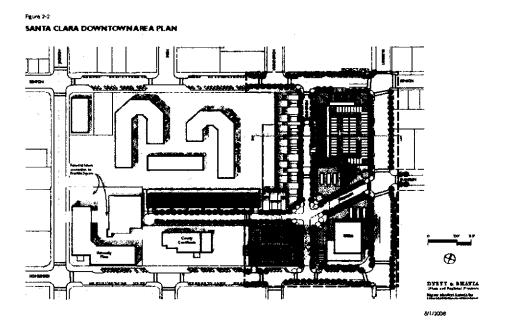


Figure 2-2 Downtown Plan



lined with retail and on-street parking. The Downtown Plan only covers a key site in the broader downtown area.

2.3 ADJACENT AREA AND REGIONAL PLANS

The City of Santa Clara is situated at the center of the Silicon Valley, and is bordered by Sunnyvale, San José and Cupertino. There are several development projects moving forward in these neighboring cities that may affect Santa Clara residents and the General Plan Update. In addition, regional initiatives, including planning efforts along the El Camino Real corridor, may provide development and funding opportunities for the City.

ADJACENT CITY AND AREA PLANS

City of Sunnyvale

City of Sunnyvale General Plan

Santa Clara shares a boundary with Sunnyvale, along Calabazas Creek above Central Expressway, west of Lawrence Expressway between Central Expressway and the Caltrain tracks, and west of Lawrence Expressway from Cabrillo Avenue south. Sunnyvale's 1997 General Plan maintains the eastern edge bordering Santa Clara for industrial uses north of the railroad tracks and residential uses south of the railroad tracks. However, there is a portion of existing residential and mobile home development between U.S. 101 and Tasman Drive that abuts office and research and development in Santa Clara. Although stakeholders acknowledged this potential conflict, Calabazas Creek provides a separation between these communities and uses.

El Camino Real Precise Plan

The City of Sunnyvale has adopted a vision for its portion of El Camino Real. The Plan presents design guidelines and opportunities for redevelopment along the corridor at specific nodes, including the "gateway" to Santa Clara at Lawrence Expressway. These design guidelines encourage landscaping, monuments and signage that signify arrival into Sunnyvale.

Lakeside Specific Plan

Just southeast of the U.S. 101 and Lawrence Expressway intersection and west of the Calabazas Creek, the City has approved the redevelopment of an existing hotel into a mixed-use hotel and residential development. The planned redevelopment calls for 263 hotel units (a net loss of 115 hotel rooms), but adds 250 new residential units.

City of San José

City of San José General Plan

Santa Clara also shares a boundary with San José to the north, east and south. On Stevens Creek Boulevard, San José's General Plan calls for maintaining the auto sales uses and discourages residential development. The Plan also identifies the Winchester Boulevard corridor, south of Stevens Creek Boulevard, as an area with intensification and reuse opportunities. To the east, adjacent to the airport, the Plan describes the redevelopment of 465 acres as part of the Rincon South Planned Community, bounded by U.S. 101, I-880 to the southeast and the Guadalupe Parkway (Route 87). The Plan calls for low-, medium-, and high-density residential, hotels, commercial, and industrial development that take advantage of the

light-rail access and airport proximity. Lastly, plans for the neighboring Alviso community are described in the Specific Plan below.

Alviso Specific Plan

The historic Alviso community of San José, which borders the north end of Santa Clara at SR 237, has a modest amount of growth projected in its specific plan. Closest to Santa Clara, along the SR 237, the Plan allows for a range of retail, commercial and light industrial uses, on a closed landfill site and existing industrial site. Residential development is allowed in the existing residential community northeast of these industrial zones.

North San José Vision Plan

The City has developed a Vision Plan for North San José, a thriving economic and industrial center. North and west of Interstate 880 and south of SR 237, this area shares a boundary with the City of Santa Clara. The Plan seeks to increase office, industrial, and research and development uses by 26.7 million square, creating up to 80,000 new jobs. It seeks to develop the core industrial area along the First Street corridor between Montague Expressway and Brokaw Road. The Plan also proposes to convert 285 acres of existing industrial land to residential use and allow mixed use residential development within industrial areas in appropriate places: near jobs, amenities and transit infrastructure. This would result in up to 32,000 new residential units within the planning area.

City of Cupertino

City of Cupertino General Plan

Cupertino shares a small border with Santa Clara, west of Lawrence Expressway, between Homestead Road and Stevens Creek Boulevard. Cupertino's General Plan identifies streetscape and other landscaping improvements along Stevens Creek Boulevard. The Plan allows residential and office development on mid-block parcels, and neighborhood commercial development at the corners. The South Vallco Park area, just east of the shared boundary, is slated for 711 housing units, according to the Plan. The North Vallco area is described in the Master Plan below. The General Plan allows the highest building heights in the City in this area, at 60 feet, as part of this major employment center.

North Vallco Master Plan

The City has initiated a planning process for the North Vallco area, bounded by Homestead Road, Tantau Road, Interstate 280 and Wolfe Road. Already, a substantial employment and education center, initial visioning called for intensification of commercial office and industrial uses as well as retail services. Residential development is also under consideration within the planning area. The City's General Plan also allows hotels and suggests that about 760 hotel rooms could be built in the area by 2020.

REGIONAL PLANS

El Camino Real Grand Boulevard Initiative

The revitalization of El Camino Real into a "grand boulevard" is a collaborative project of the cities and counties that contain the historic thoroughfare. The planning initiative seeks to encourage residential development and job growth in targeted areas and enhance the urban design and landscaping along the corridor. The project hopes to improve mobility for pedestrians and motorists, while improving the quality of life for residents, workers and visitors. The Association of Bay Area Governments (ABAG) is also sponsoring a "corridors program" to encourage coordination of transportation and land use, as well as infill residential development, along major state-owned corridors, including El Camino Real.

Focusing Our Vision: Priority Development Areas

The Bay Area's regional governments, Association of Bay Area Governments (ABAG), Bay Area Air Quality Management District (BAAQMD), San Francisco Bay Conservation and Development Commission (BCDC), and Metropolitan Transportation Commission (MTC), have come together to initiate the FOCUS Program. The purpose of the FOCUS Program is to encourage growth and revitalization in existing communities; the Program seeks to provide planning and construction funding for projects in "Priority Development Areas" (PDAs) with high transit accessibility and potential for redevelopment. These areas are identified in Section 2-7 of this chapter, which describes development opportunity sites in Santa Clara.

2.4 CURRENT LAND USE PATTERN

The City of Santa Clara has transformed significantly over the past century—from a small agricultural town to the center of technology in the Silicon Valley. The past 15 years—particularly during the dot-com expansion—have given rise to a wave of new development in the City. Today, Santa Clara is a vibrant and busy residential and job center that is continuing to grow and evolve. Recent development has included new office, research and development space as well as single- and multi-family residential uses. Most of this development has occurred in the northern half of the City where the remaining open land and large opportunity sites were located. However, the City has developed the majority of these larger vacant areas, and is essentially built out.

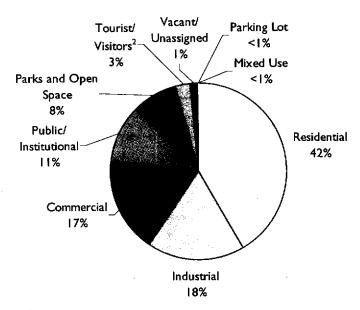
The General Plan update process will examine how and where the City's development pattern may change over the next 25 years. The pattern of Santa Clara's development can be seen in an aerial photograph—Figure 2-3. The land uses of the City, as of summer 2008, are mapped in Figure 2-4.

OVERALL PATTERN

The City's land use pattern is characterized by well-defined land use areas, including single-family neighborhoods, commercial corridors, an industrial core, and office development. These uses are largely defined by their location in the City. South of the east-west Caltrain corridor, the City houses much of its residential and neighborhood-serving infrastructure, including retail establishments, schools, and parks. North of the Caltrain corridor, the City is defined primarily by non-residential uses, with a large east-west industrial corridor located between Caltrain and U.S. 101. However, as a whole, the City maintains a diverse array of uses, as shown in Table 2-1 and Chart 2-1. Almost half of the developable land in the City —that is, excluding

roads, highways, and other rights of way—is Residential (41%). Employment uses, including Industrial (18%), and Commercial (17%), constitute the next most prevalent uses. Tourist/Visitor uses (3%), which include hotels and entertainment venues, represent a small portion of the land area. Less than one percent of the land is mixed-use development. The remaining 20 percent is comprised of Public/Institutional use (11%), Parks and Open Space (8%), and vacant land and other uses.





Total developable land.

The majority of residential and commercial uses in the City are located in the southern half of the City, south of the Caltrain corridor. This area is primarily residential, with a mix of well-established single family neighborhoods, and most of the City's schools and parks. Outside of, or adjacent to, these neighborhoods, newer high-density residential development is located along key transportation corridors, such as El Camino Real and Lawrence Expressway.

Demarcating Santa Clara's historic growth pattern, this southern portion of the City is anchored by the Downtown core and Old Quad neighborhood at the eastern end of the City, along with Santa Clara University—one of the largest land uses in the City. The bulk of commercial development in this area—primarily auto-oriented services, professional offices, and retail uses—are located along El Camino Real, which acts as the major east-west corridor through Santa Clara's residential core. Additional, smaller neighborhood-oriented retail uses are located along Homestead Road and Saratoga Avenue, while larger-scale auto sales and services front Stevens Creek Boulevard at the very southern edge of the City.

² Includes hotels and entertainment venues.

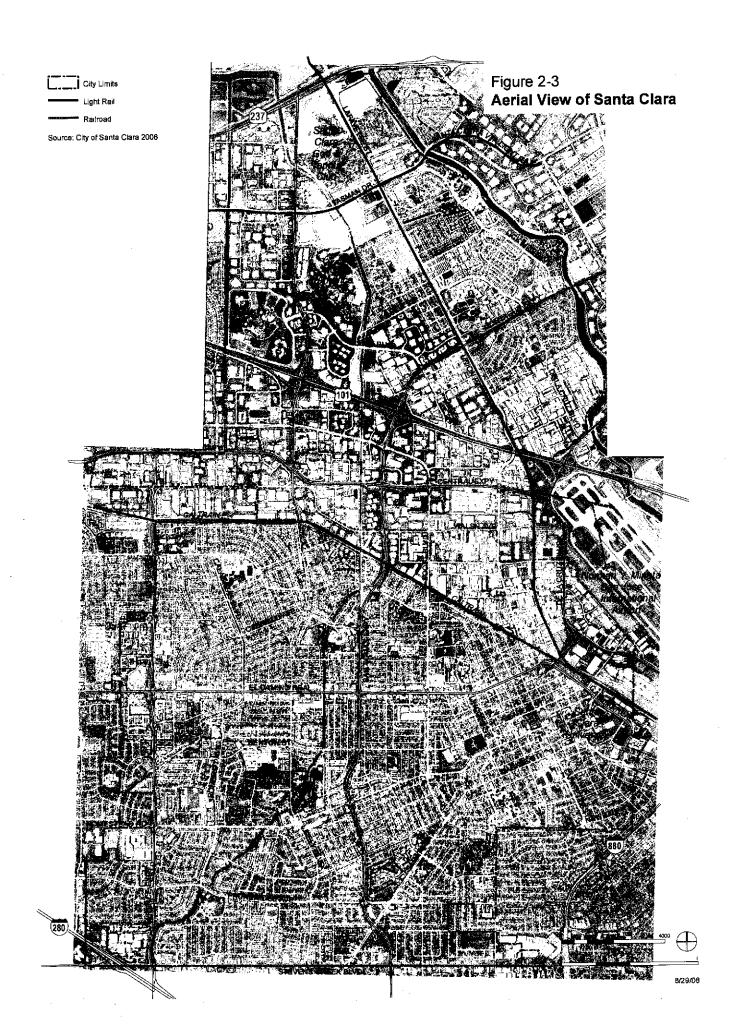
Table 2-1: Land Use (2008)

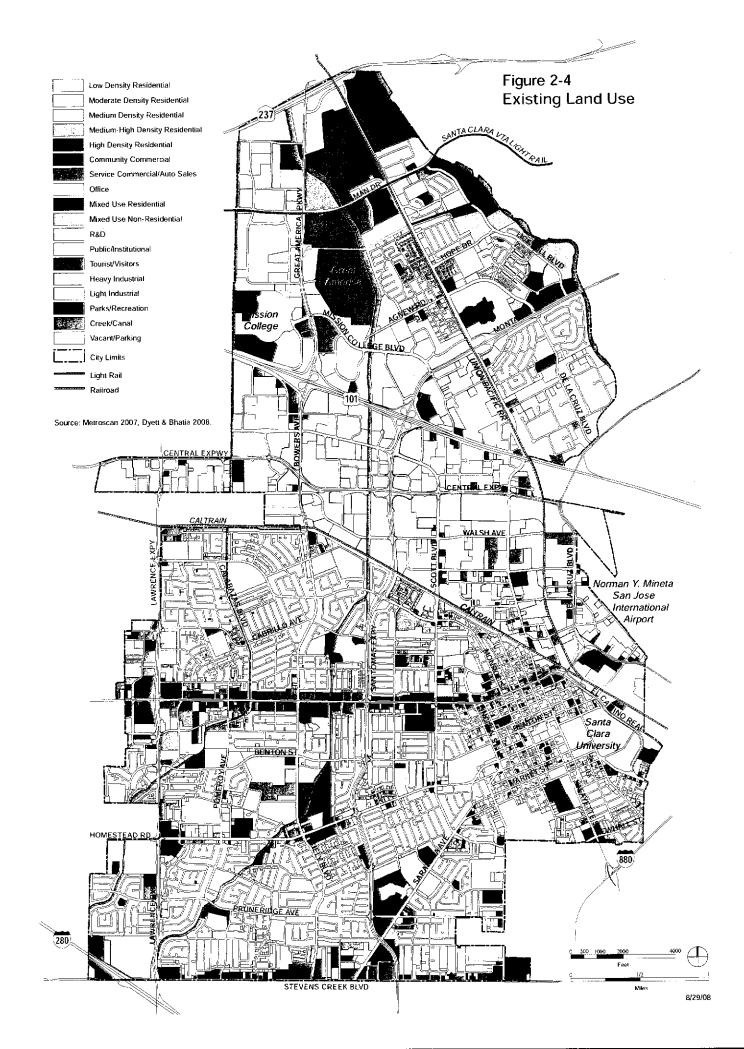
Table 2-1: Land Use (2008)		0/ -ET!
Land Use Type	# of Acres	% of Total '
Residential	3,878.3	41.5%
Low Density (0 to 7 units/acre)	2,428.0	26.0%
Moderate Density (8 to 15 units/acre)	706.0	7.6%
Medium Density (16 to 25 units/acre)	288.9	3.1%
Medium-High Density (26 to 35 units/acre)	312.4	3.3%
High Density (36+ units/acre)	142.0	1.5%
Mixed Use	32.0	<1%
Mixed Use Non-Residential	28.3	<1%
Mixed Use, With Residential	3.7	<1%
Commercial	1,617.9	17.3%
Community Commercial	395.6	4.2%
Service Commercial/Auto Sales	148.5	1.6%
Office	787.3	8.4%
R&D	286.4	3.1%
Tourist/Visitors ²	254.1	2.7%
Industrial	1,651.7	17.7%
Light Industrial	1,033.2	11.1%
Heavy Industrial	618.5	6.6%
Public/Institutional	994.8	10.7%
Civic	424.3	4.5%
Educational	570.5	6.1%
Parks and Open Space	760.5	8.1%
Parks/Recreation	566.2	6.1%
Creeks	194.3	2.1%
Vacant/Unassigned	135.9	1.5%
Parking Lot	10.3	<1%
SUBTOTAL (DEVELOPABLE LAND)	9,334.5	100%
Roads and Other Rights of Way	105.3	
TOTAL	9,439.8	
I		

Total developable land.

Source: City of Santa Clara, Metroscan, Dyett & Bhatia

² Includes hotels and entertainment venues.





Running east-west through the middle of the City, the Caltrain corridor acts as a distinct division line between the southern residential and the northern employment areas of the City. Most of the industrial uses within the City are located between the Caltrain corridor and U.S. 101. Very few residential uses are located in this area, although the Santa Clara Station Area Plan—located at the southeastern-most edge of this area— could add a new residential neighborhood and retail district north of the Caltrain tracks adjacent to the future BART Station.

Much of the industrial core between Caltrain and U.S. 101 was developed mid-century between 1960 and 1980. Parcel and building sizes are generally larger in scale in this area, compared with those in the southern portion of the City. In the past 10 to 15 years, several larger sites in the area have transitioned into office, and research and development uses. North of U.S. 101, the industrial zone has a greater mix of uses, including several large office parks and campuses that include the Sun Microsystems, Intel, and Yahoo! campuses. Additionally, the area is home to other several larger land uses, including Mission College, Great America, the City of Santa Clara Golf and Tennis Club, and the Rivermark and Agnew residential development. Residential neighborhoods are few in number but large in size, particularly in Rivermark, which includes about 3,100 housing units.

DISTRIBUTION OF USES

Residential

Santa Clara's population of 115,500 lives in the City's estimated 44,166 housing units, as described in Table 2-2. Approximately half of the City's housing units are single-family detached or attached homes. Nine percent of residential properties have two to four units, and 40 percent have five or more units.

Single-family neighborhoods (generally with residential densities under eight units per acre) comprise a quarter of the developable land area in the City. The majority of single-family homes in the City are located south of the Caltrain tracks—approximately 90 percent. Housing types and sizes do vary in the City and include townhomes, multi-family apartments, and condominiums. The area around Downtown Santa Clara also includes student housing for Santa Clara University, although this is a very small proportion of total housing units in the City.

¹ Population and housing units estimated as of January 1, 2008 by California Department of Finance (Report E-5).







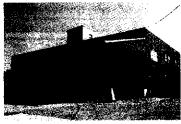
Santa Clara enjoys a variety of single-family homes and neighborhoods, from the historic homes in the Old Quad and mid-century residences (left and center), to new single-family residential developments that are part of master planned areas, such as Rivermark, and often built as attached units (right).







El Camino Real is the main commercial corridor in the City, characterized by both small-scale retail stores and large strip malls with surface parking (left and center). Like El Camino Real, Stevens Creek Boulevard is characterized by a wide right-of-way and car orientation. This is fitting, considering its role as a major regional car sales center (right).







Industrial uses, including fabrication, warehousing, and outdoor storage, have varying space requirements, from assembly in small warehouses to research and development activities in buildings that look like traditional offices.







Office uses, located primarily north of the Caltrain tracks and U.S. 101, have been built at greater intensities and heights in recent years to accommodate more employees, businesses, and technologies.

Table 2-2: Housing Units, by Type (2008)

	# of Units	% of Total
Single Family Detached	18,617	42%
Single Family Attached	3,759	8%
2 to 4 Units	3,929	9%
5 or More Units	17,861	40%
Mobile Homes	109	<1%
Total	44,275	100%

Source: California Department of Finance, 2008

MIXED-USE DEVELOPMENT

Mixed uses make up less than one percent of the land uses within the City. These include development with commercial and residential uses, as well as non-residential uses like visitor/tourist and office uses.

Non-Residential

Industrial uses are the dominant non-residential use in Santa Clara, followed closely by office, research and development uses. Retail and auto service uses are a significantly smaller proportion of the total. Table 2-3 and Chart 2-2 show the square feet of each land use type.

Table 2-3: Non-Residential Building Square Feet, by Land Use (2008)

Non-Residential Land Use Type	Square Feet	% of Total
Light Industrial	16,052,187	27%
Heavy Industrial	9,840,976	17%
Office	15,116,243	26%
R&D	5,711,520	10%
Community Commercial	5,336,308	9%
Mixed Use Non-Residential	2,534,850	4%
Tourist/Visitors	1,969,814	3%
Service Commercial/Auto Sales	1,379,091	2%
Public/Institutional	817,800	1%
Mixed Use Residential	47,925	0%
	58,806,715	100%

I. Total developable land.

Source: City of Santa Clara, Metroscan, Dyett & Bhatia 2008.

^{2.} Includes hotels and entertainment venues.

Office and Research & Development

Over half of all office uses are located north of U.S. 101: along Great America Parkway, Tasman Drive, and Montague Expressway. This area is the core of larger-scale, more intense office uses. Nearly a third of office space in the City—much of which has replaced lower-intensity industrial uses—is distributed here. A few uses are scattered in the southern half of the City along El Camino Real, Saratoga Avenue, and in Downtown. Most of the research and development space in the City—around 5.7 million square feet—is scattered throughout the northern half of the City.

Industrial

The majority of the heavy and light industrial space in the City—around 63 percent—is located between the Caltrain corridor and U.S. 101. Thirty-six percent of industrial space is located north of U.S. 101. The City's industrial businesses concentrate on light manufacturing, warehousing, and wholesaling. Over the past ten years, several industrial sites have transitioned into higher-intensity office uses. Generally, these have been larger parcels located along major transportation corridors like Central Expressway and Scott Boulevard.

Commercial

Excluding offices, commercial uses comprise a smaller proportion of land uses in the City, (11 percent of building space and six percent of the City's developable land area). The commercial category includes both community commercial uses, like stores and professional services, as well as service/auto uses like gas stations and auto sales.

Commercial uses are primarily located along El Camino Real and Stevens Creek Boulevard. Along El Camino Real, uses are local in scale and orientation, and include a significant amount of auto-oriented uses like auto repair and service stations. Larger-scale uses along El Camino Real include more city-wide or regional retail uses, although these comprise a small amount of the total along this corridor. Commercial uses along Stevens Creek Boulevard, on the other hand, are more regionally-oriented and are dominated by car sales. Additional commercial uses are located in pockets throughout the City, including a scattering of neighborhood-oriented retail to the south and newer larger-scale retail nodes (like the Mercado Center and Rivermark) north of U.S. 101.

Visitor and Tourist

While visitor and tourist uses are a minimal proportion (3%) of the developable land in Santa Clara—the largest of these uses, Great America, is a key attraction in the region. Located along Great America Parkway, the amusement park is adjacent to the Santa Clara Convention Center and Golf and Tennis Club. The remainder of visitor and tourist uses is comprised of larger-scale hotels along Great America Parkway/Bowers Avenue, and smaller-scale hotels and motels clustered along the El Camino Real commercial corridor.

Public and Institutional

Public and institutional uses make up 11 percent of the land area in Santa Clara. This category includes civic uses—City Hall, police and fire stations, public services, and other City-owned properties; educational uses, which include the land owned by Santa Clara Unified School District, Santa Clara University and other private institutions; and other public or quasi-public

facilities, including Kaiser Hospital. (See Chapter 6: Public Facilities for details.) The majority of the City's public land is located south of U.S. 101, in the residential neighborhoods.

Service Commercial/Auto Public/ Sales Institutional Tourist/ Visitors 1% 3% Light Industrial Mixed Use Non-28% Residential 4% Community Commercial 9% R&D 10% Heavy Industrial Office 26%

Chart 2-2: Non-Residential Building Square Feet, by Land Use (2008)

Source: City of Santa Clara, Metroscan, Dyett & Bhatia 2008.

2.5 DENSITIES AND INTENSITIES

Density—the number of housing units in a given area—and intensity—measured as the amount of floor space in a given area—are key determinants of how many people live and work in an area. It is, therefore, a fundamental topic for land use planning. Santa Clara has added many new jobs and residents over the last two decades and is essentially built out. However, over the next 25 years, the Association of Bay Area Governments (ABAG) projects that the City will add an additional 30,000 residents and 50,000 jobs. Maintaining areas of lower densities and providing opportunities for greater intensities will be addressed in the General Plan Update. This section examines the existing densities and intensities of the City and identifies recent trends in their location.

EXISTING DENSITIES AND INTENSITIES

Residential densities are measured in housing units per acre (hu/ac) while intensity of non-residential development is measured by the floor area ratio (FAR). The FAR measurement describes the ratio of building space to lot size, such that an FAR of 1.0 describes a one-story building that covers 100 percent of the parcel, or a two-story building that covers only half the parcel. The existing densities and intensities of the City are mapped in Figure 2-5.

Non-Residential

Much of Santa Clara is developed at a relatively low intensity (between 0.2 and 0.5 FAR). There is a scattering of office, research and development, and hotel buildings that have FARs above 2.0. Generally, the highest intensity properties in the City are located along key transportation

corridors through the City and in the northern office core. The greatest actual FAR in the City is an office development, north of the Caltrain tracks. The next highest FARs are research and development (3.4) and hotel uses (2.9).

Table 2-4 shows the average FARs for commercial and industrial land uses in Santa Clara. Research and Development and Tourist/Visitor uses (which include hotels) have the highest ratio on average: 0.5 FAR. Office uses average 0.4 FAR, while Industrial uses average slightly lower, between 0.3 and 0.4, for heavy and light industrial uses, respectively. Community Commercial and Service Commercial uses are the lowest, with an average of 0.3 and 0.2, respectively. While many developments in the City stand several stories high, they often report relatively low FARs because they are surrounded by large surface parking lots, which lowers the overall FAR on the sites.

Table 2-4: Average FAR of Non-Residential Land Uses

Land Use	FAR
Community Commercial	0.3
Service Commercial/Auto Sales	0.2
Tourist/Visitor	0.5
Heavy Industrial	0.3
Light Industrial	0.4
Office	0.4
R&D	0.5

Source: City of Santa Clara, Metroscan, Dyett & Bhatia 2008



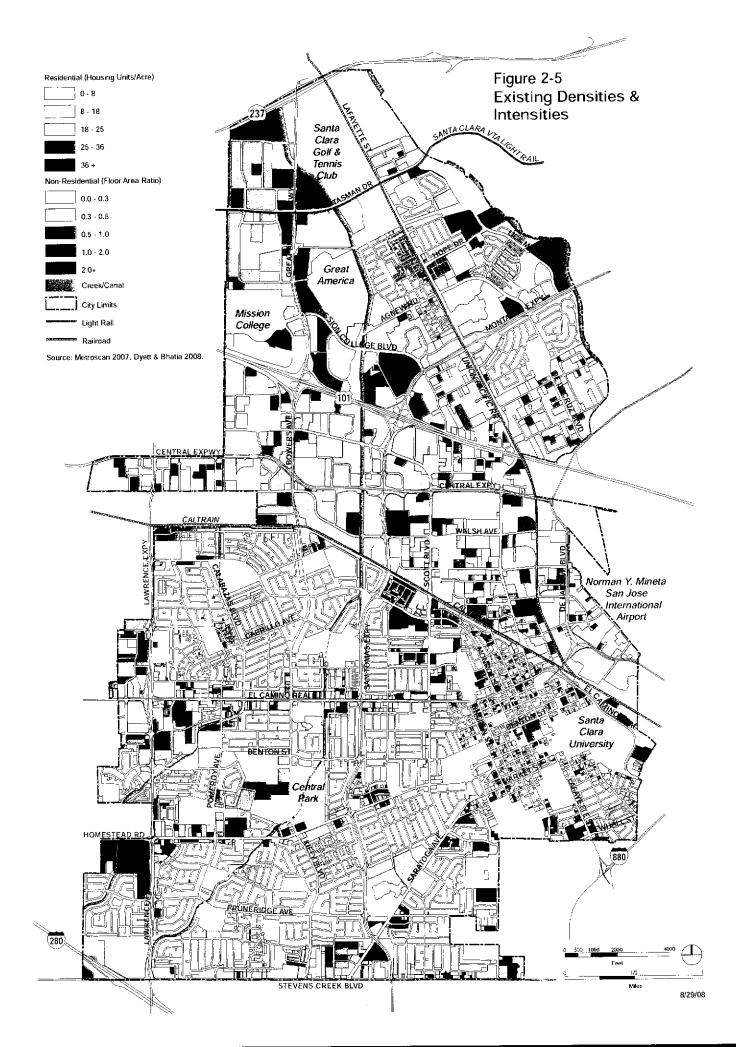




Commercial development comes in various building intensities: community commercial development serving neighborhoods average an FAR of 0.3 (left), service commercial or auto-oriented uses are the lowest-intensity commercial uses (center), while tourist and visitor commercial services, such as hotels, have the highest FARs (right).

Residential

Just over half of all housing in the City is built at low to moderate densities to accommodate single-family housing typologies, as shown in Chart 2-3. One third of the City's housing units have densities of zero to seven units per acre. Medium-high density housing, at 26 to 25 units per acre, is the next most prevalent residential density, at 20 percent. The City has increasingly built more medium- to high-density housing, such that residential densities of 18 units per acre and above, now compose nearly half of all housing units in the City. Newer residential developments, including portions of the Rivermark neighborhood, have higher densities.



TRENDS IN DENSITIES AND INTENSITIES OF DEVELOPMENT

Based on recent and approved projects, as well as the Downtown and Station Area Plans for the City, non-residential intensities in Santa Clara are increasing. The City is expected to experience an increase in office and employment density because one- and two-story office buildings with surface parking are being replaced by office towers with structured or underground parking. As space requirements change, the City is also seeing an increase in FARs in the heavy and light industrial and land use categories. As a result, new office, industrial, and research and development projects that are approved or under construction, are anticipated at FARs averaging 0.5. Lastly, the Station Area Plan includes FARs of up to 3.0 around the new BART/Caltrain Station.

High (36 +units/acre) Low 15% (0 to 7 units/acre) 33% Medium-High (26 to 35) units/acre) 20% Medium Moderate (18 to 25 (8 to 17 units/acre) units/acre) 14% 18%

Chart 2-3: Distribution of Housing Units, by Density (units per acre)

Source: City of Santa Clara, Metroscan, Dyett & Bhatia 2008.

Meanwhile, the residential density of the City could increase if new higher-density development is constructed along transit corridors. Recently approved projects average 21 hu/ac. The Downtown Plan proposes a density of 55 units per acre in a mixed-use setting. The highest densities proposed within the City are located in the Station Area on the northeast side of the Caltrain tracks.







Low-density single-family homes are the most prevalent housing type in the City (left), but medium- and high-density housing is increasingly being added to the City, as land becomes more scarce (center and right, respectively).

2.6 MAJOR DEVELOPMENT PROJECTS AND TRENDS

RECENT DEVELOPMENT

The City has seen steady growth in residential and non-residential development since the last General Plan update in 1992.

Non-Residential

Most new non-residential development has come in the form of office, research and development, and other high-tech development in the City's main job corridor between U.S. 101 and the Caltrain tracks. Santa Clara has become an appealing place for industries with high energy and high-tech needs. This phenomenon is mainly due to low electricity rates through the City's public utility, Silicon Valley Power; an extensive fiber-optic network; and the City's competitive location and knowledge base in Silicon Valley. As a result, one of the City's newest land uses is the data center, which houses computer servers and other data storage devices. Data centers are similar to office buildings in appearance, but differ in several key ways. They require much higher energy use—due to running servers and the necessity of cooling the equipment; they require fewer employees, thereby reducing demand for on-site parking and day time services (e.g. lunch venues, dry cleaners, etc). As of April 2008, the City had approximately 1.3 million square feet of building space devoted to data centers, with 850,000 square feet more either proposed, approved, or under construction.

Residential

Since 2000, most new development—approximately 4,600 units—has been multi-family development. The distribution of housing types in the City is shown in Chart 2-4, and is compared to more recent development types in the City since 2000. Many of these new units have been added as infill opportunities in the southern half of the City, although the Rivermark development has added a significant portion north of U.S. 101. In 2002, construction began on the 152-acre Rivermark Master Plan on the former Agnews Developmental Center site. Rivermark has added approximately 2,700 units to date, with an additional 430 units to be completed by 2009. This new neighborhood also contains parks, a school, a library, and retail services.

2 to 4 Units

5 or More

Units

20,000 15,000 10,000 5,000 ■ 2008

Single Family

Attached

Chart 2-4: Recent Change in Housing Units, by Type

Source: California Department of Finance, 2000 and 2008.

Single Family

Detached

2-22 | LAND USE

0

While the City is primarily built out, new opportunities for residential development still exist. The Station Area Plan, for example, identifies opportunities for significant new residential development around the future BART Station.

POTENTIAL AND APPROVED DEVELOPMENT

The City is continuing its growth trend, with a host of new projects in the pipeline—either, proposed, approved or under construction. Table 2-4 and Figure 2-6 describe the type and location of these projects. The majority of projects are office developments, with nearly 3,000,000 square feet approved and another 9,000,000 square feet proposed. Additional commercial uses, totaling over 560,000 square feet, have been proposed, while 686,000 square feet of commercial space are actually approved or under construction. Lastly, nearly 2,000 hotel rooms are included in the project pipeline, most of which are proposed as part of the Station Area Plan.

In terms of residential development, 1,749 housing units are under construction or approved for construction, with an additional 3,434 units proposed. If constructed as proposed, these units would increase the housing supply by 12 percent to over 49,000 housing units. The bulk of these pipeline housing units come from just a few major projects, including over 1,600 from the proposed Station Area Plan and a 275-unit development at the BAREC site on Winchester Boulevard.

LAND USE TRENDS

Residential

The City has a range of residential development projects under construction and recently completed. Table 2-5 reports a sampling of residential project types, including large-scale master planned developments and small-scale infill developments around Downtown.

Non-Residential

As of June 2008, the City has several non-residential projects underway and recently constructed. In particular, the City has been adding higher density office space, data centers, as well as research and development facilities. New retail development is more limited. Table 2-6 reviews several recent major projects, describing the building size, height, FAR and parking allocation for each project.

2.7 VACANT LAND AND REUSE OPPORTUNITIES

Given the built out nature of the City, most new development will come from reuse of underutilized properties and other infill opportunities. There are several key planning areas—the Station Area and Downtown—and corridors such as El Camino Real, that could provide opportunities for redevelopment. Redevelopment could also arise through the conversion of land uses, as demand shifts. Other vacant and underutilized sites that may provide opportunity for redevelopment are identified in Figure 2-7.

KEY OPPORTUNITY AREAS

Station Area and Downtown

The Station Area and Downtown currently represent the largest areas with identified redevelopment potential. During community workshops and stakeholder meetings, community members identified these areas as appropriate for housing development, at higher-densities, as well as additional retail and entertainment venues. The Station Area could become a true transit-oriented development, capitalizing on the accessibility of the transit station and its ridership. Moreover, residents agreed that Downtown Santa Clara, around Franklin Square, was in need of commercial revitalization. Community members said that they would be likely to spend time Downtown if there were better retail and entertainment services, such as restaurants and movie theaters. In general, there seems to be a desire for places that are pedestrian-friendly, easily accessed, and contain high-quality everyday shopping services. Community members pointed to Mountain View and University Avenue in Palo Alto as examples of model downtowns.

El Camino Real

El Camino Real has also been identified as a key area for mixed-use development and intensification, given its prominence as an intercity corridor. Although opinions differed on the intensity of building heights and densities as well as the appropriateness of residential development, there seems to be consensus on the need to improve this corridor as a retail destination. Compared with the portions of El Camino Real in adjacent cities, Santa Clara lacks higher-end retail services that its population demands. Residential development also may be feasible and appropriate.

Stevens Creek Boulevard

Stevens Creek Boulevard is characterized as a thriving auto mall, essential to the City's tax base. Stakeholders and other community members expressed support for these uses and their continuation. However, there may be opportunities to increase building intensities for auto dealerships. Some dealerships already utilize two-story buildings for offices and parking needs. In addition, there may be opportunities for additional residential development just off Stevens Creek Boulevard.

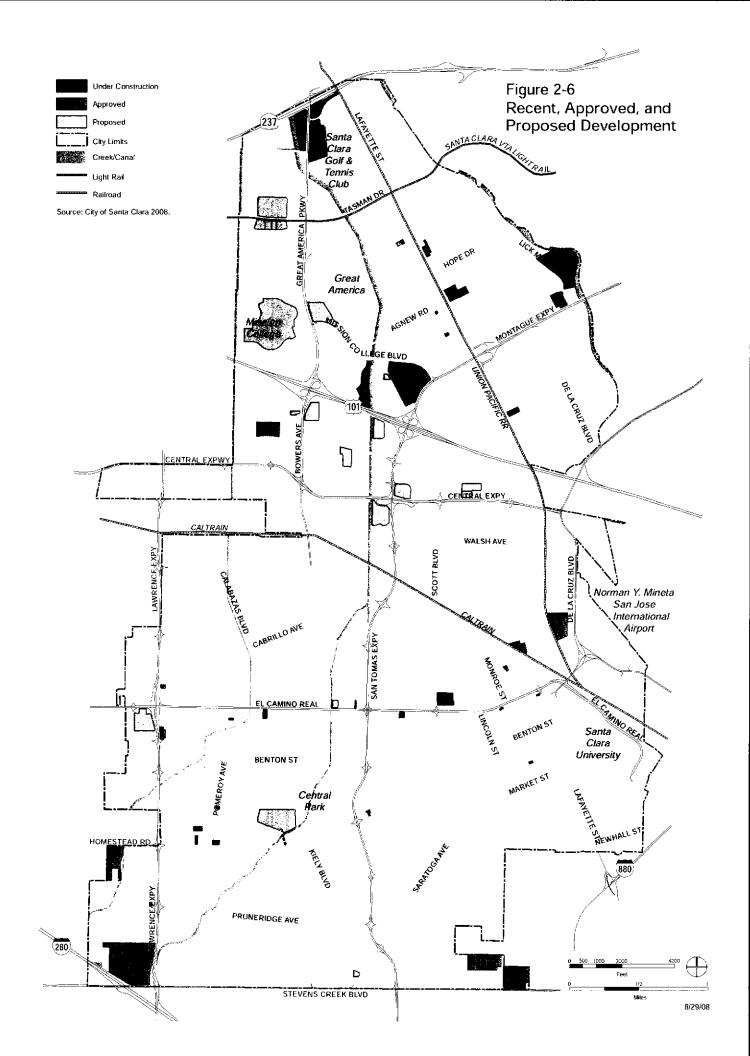
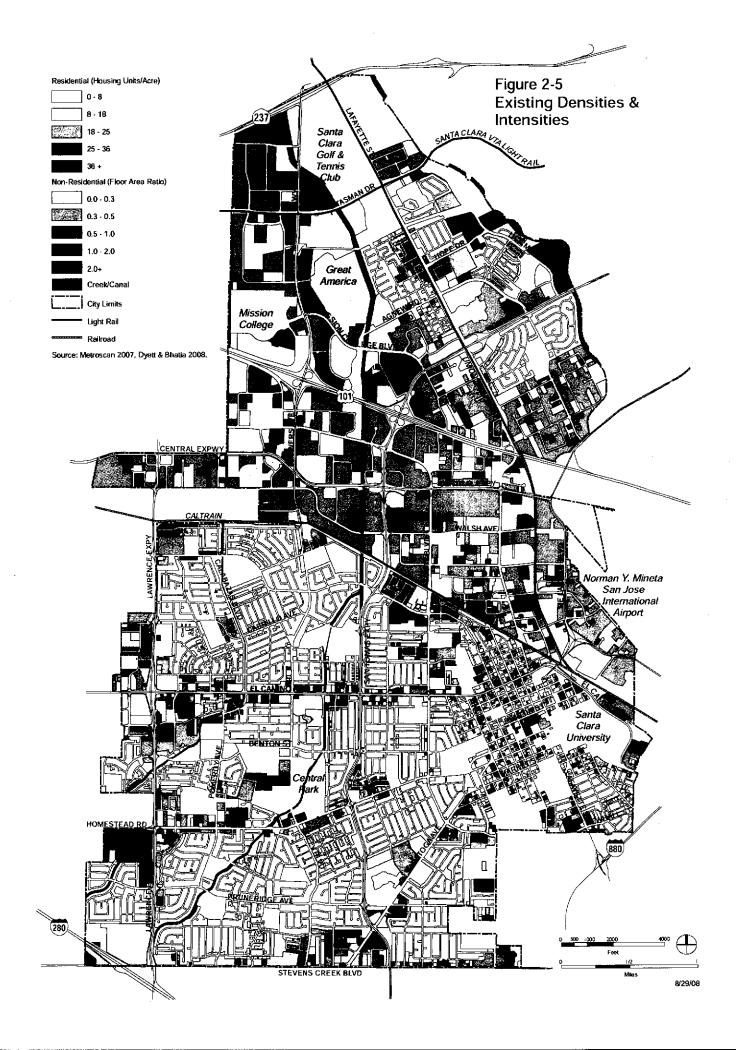


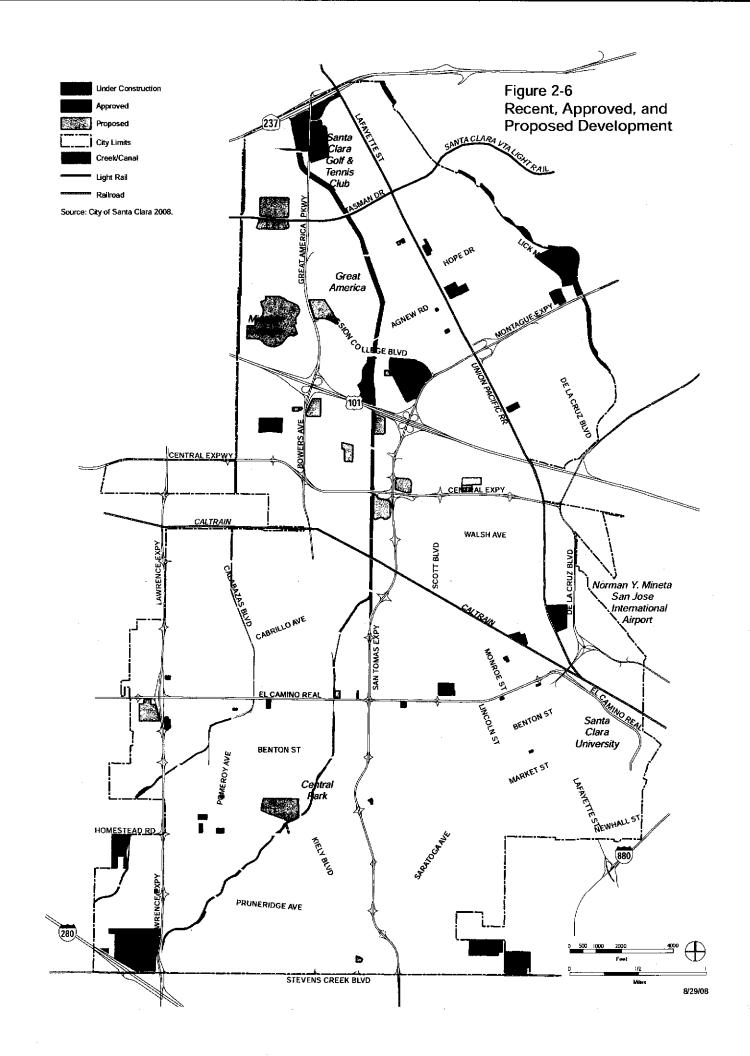
Table 2-4: Recent, Approved and Potential Development

Dusing Managara	Commercial	Office (SF)	Industrial and R&D	Hotel	Housing Units
Project Name/Address Under Construction	(SF)	Office (3r)	(SF)	(rooms)	Onics
	· · · · · · · · · · · · · · · · · · ·	<u>' </u>	T	T	430
M2 at Rivermark (550 Moreland)				1	202
Mission Terraces (Agnew Road and Lafayette)					
1655 Scott Avenue (Shea/UL Site)			<u> </u>		130
502 Mansion Park Drive (Lick Mill Creek Apartments)					124
1777 Agnew Road					59
3625 Pruneridge Avenue (Pruneridge Villas)					8
2447 Homestead Road					8
2255 Gianera Street					6
841 Monroe Street					4
1824 Market Street					3
900 Pomeroy Avenue					3
3060 El Camino Real	3,330				
Approved					
90 N. Winchester Boulevard (BAREC)			-		275
3445-3465 Lochinvar Avenue					30
1828-1878 Main Street					28
4767 Lafayette Street					27
I 460 Monroe Street	1,800				18
2250 El Camino Real					18
3421 Homestead Road					14
1701 Lawrence Road					9
1468 Lafayette St					4
4092 Davis St.					4
3360-3380 Edward Avenue					3
4272 Davis Street	2,084				2
3471 Lafayette Street (car wash)	1,357				
1920 Lafayette Street (industrial condos)		15,840	50,000		
2489 El Camino Real (motel)				18	
2250 Mission College Blvd.(Intel)		100,000			
3333 Scott Blvd. (Applied Materials)			840,000		

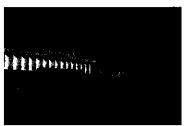
Project Name/Address	Commercial (SF)	Office (SF)	Industrial and R&D (SF)	Hotel (rooms)	Housing Units
5355 Great America Pkwy. (Irvine)		911,000]	
5450 Great America Pkwy.		218,198			
5301 Stevens Creek Blvd. (Hewlett Packard)		727,500			
Freedom Circle (Intel)		400,000			
Proposed					
Station Area Plan	360,739	854,246	114,342	1,777	1,663
900 Kiely Blvd. (Old Kaiser Site)					812
3610 and 3700 El Camino Real (Santa Clara Square)	29,289	12,300			490
Downtown Plan	129,300				400
1331 Lawrence Expwy. (Marina Playa/BRE)					340
2585 El Camino Real	3,307				60
2303 Gianera St.					6
1575 Pomeroy					3
2800 San Tomas Expwy. (Harvest Properties)		2,000,000			
2727 Augustine Dr. (EOP)		1,925,000			
4301 Great America Pkwy.		718,000			1-
2200 Lawson Lane (Sobrato)		516,000			
2350 Mission College Blvd. (Maskatiya/Suri)	6,000	300,000			
3250 Scott Blvd.		215,000			
70 Saratoga Ave.		3,739			
2875 Lakeside Dr. (condo-hotel)				170	
Total Development	537,206	8,916,823	1,004,342	1,965	5,183
Under Construction	3,330	0	0	0	977
Approved	5,241	2,372,538	890,000	18	432
Proposed	528,635	6,544,285	114,342	1,947	3,774

Source: City of Santa Clara Planning Department, Dyett & Bhatia, 2008.











The City has many infill opportunities for redevelopment near downtown (left), on surface parking and underutilized sites along El Camino Real (center), and, to a lesser extent, along Stevens Creek Boulevard (right).

Priority Development Areas (PDAs)

As described earlier in this chapter, the consortium of Bay Area regional governments has proposed a program to fund infill development projects around key transportation hubs and corridors throughout the region. The Valley Transportation Authority (VTA), Santa Clara County's transportation agency, submitted an application to designate the major transit and automobile corridors and City cores throughout the South Bay as priority areas eligible for funding. Figure 2-7 shows the PDAs in Santa Clara, including: the Lawrence and Santa Clara Caltrain station areas, the VTA rail corridor and station area, El Camino Real and Stevens Creek Boulevard. In order to be eligible for funding and targeted as a "Planned" PDA, the City of Santa Clara would need to first pass a resolution, confirming the City's interest in the program and a vision of revitalization for its PDAs.

VACANT AND UNDERUTILIZED PARCELS

The City has very few vacant sites remaining; the 136 acres of vacant land in the City includes properties that are small or awkward in shape or location. Some of them already have development proposals in the pipeline, leaving approximately 63 vacant acres available for development. The lack of land available in Santa Clara means that low-rise buildings and parcels with a low FAR may become available for redevelopment, especially if they have good access to transit or major roads.

An analysis using these criteria for underutilized sites evaluated the potential for redevelopment in Santa Clara. As shown in Figure 2-7, these three criteria are:

- Tier 1: parcels on which the land value is greater than the assessed building value resulted in 1,074 acres that may be appropriate for reuse.
- Tier 2: sites where the FAR is less than or equal to 0.25 resulted in 403 acres.
- Tier 3: sites where the FAR is between 0.25 and 0.35 resulted in 835 acres.

One additional potential opportunity site was included, near the Lawrence Caltrain Station; this site is 16 acres. In total, this analysis resulted in 2,391 acres of land that may contain appropriate sites for redevelopment. Because land values have risen substantially over the past 20 years, low-intensity shopping centers with surface parking—such as along El Camino Real—may be opportune for reuse or intensification over the next 25 years. Underutilized sites are also located in the industrial and office corridor north of the Caltrain tracks. These sites have

the potential for intensification through increasing building heights and adding structured parking.



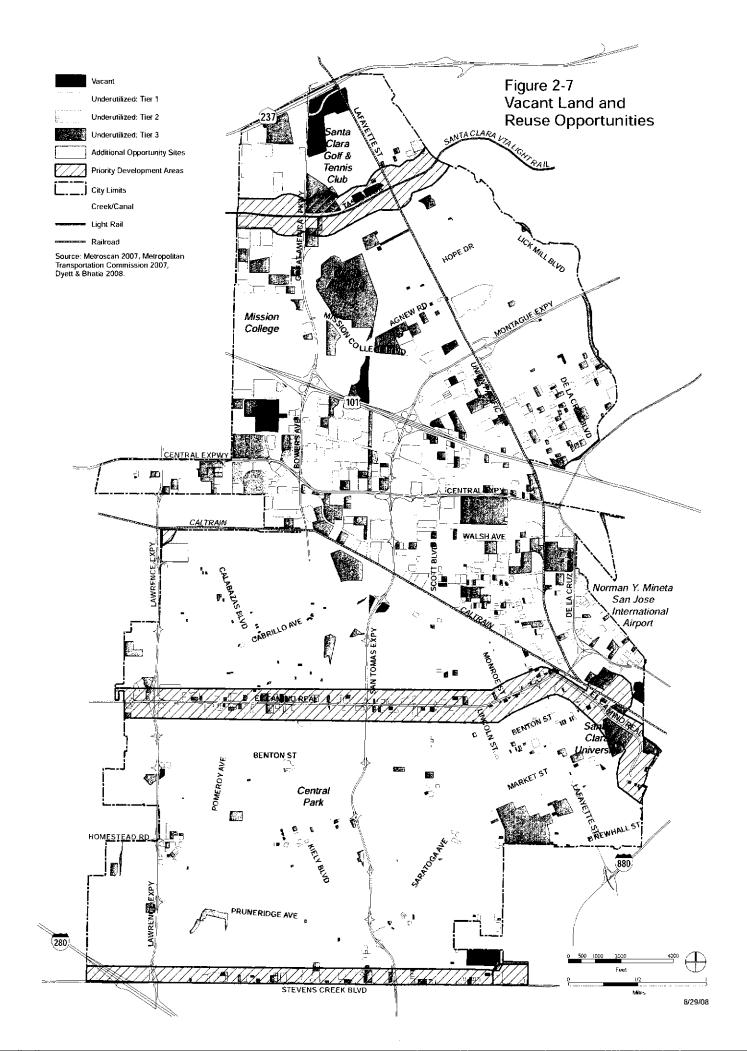




With only a few vacant parcels remaining, such as the BAREC site which is approved for development (left), underutilized sites provide the best opportunities sites for redevelopment (center and right).

Industrial to Residential Conversion

In 2004, the City of Santa Clara completed a study of industrial to residential land conversion in the wake of decreasing demand for industrial space in the City. At that time, the City Council approved a set of planning criteria guidelines to evaluate proposed conversion projects. In general, the criteria support conversion in industrial areas that are close to existing public services, such as transit, parks and schools; near existing residential neighborhoods to avoid isolated designations; compatible with surrounding areas; and not in conflict with remaining industrial uses. Based on this policy, industrial sites with the highest potential for conversion are those located adjacent to existing residential neighborhoods.



SOURCES

- Association of Bay Area Governments. "Focusing Our Vision" and "Corridors Program" http://www.bayareavision.org/
- City of Cupertino. North Vallco Master Plan Phase I. 2007.
- City of Cupertino. "Development Activity Report" December 2007. Accessed December 31, 2007

 http://www.cupertino.org/city_government/departments_and_offices/planning_and_building/development_activity/application_phase/index.asp
- City of Cupertino. General Plan 2000-2020. Land Use/Community Design. Adopted November 15, 2005.
- City of San José, Department of Planning, Building and Code Enforcement. Development Activity Highlights and Five-Year Forecast (2007-2012). February 2007.
- City of San José. "Alviso Master Plan: A Specific Plan for the Alviso Community." Adopted by City Council December 7, 1998.
- City of San José. "North San José Area Development Policy." June 2005.
- City of Santa Clara. Station Area Plan. Public Review Draft. July 2008.
- City of Santa Clara. General Plan 2000-2010.
- City of Santa Clara. Zoning Ordinance: Chapter 18.
- City of Sunnyvale. Precise Plan for El Camino Real. Adopted by City Council January 23, 2007. Resolution No. 254-07.
- City of Sunnyvale. Application(s) for a General Plan Amendment and Rezoning from "Industry" to "Industrial to Residential" for an approximately 130-acre site located between East Duane Avenue, Stewart Drive, Wolfe Road and Xavior Drive. Agenda Report and Resolution. February 27, 2007.
- City of Sunnyvale, Planning Division. Development Update. October 2007.
- City of Sunnyvale. Land Use and Transportation Element. Appendix B: Special Land Use Plans. November 1997.
- Joint Venture: Silicon Valley Network. "The Grand Boulevard Initiative." http://www.grandboulevard.net/
- Metropolitan Transportation Commission. Personal Communication with FOCUS Project Manager. March 25, 2008.

This page is intentionally left blank.



Community Design and Historic Preservation

Community design is an important part of how people experience places. It is the physical embodiment of community character, and it plays a significant role in neighborhood and city identity. Community design stems from a combination of physical features—such as connectivity, block size and streetscape—and historic characteristics associated with a city's architectural and urban legacy. In the case of Santa Clara, the City's character is largely a product of its history as a Mission City in the South Bay region, and its growth into a well-integrated part of a large urbanized area. New opportunities for development provide a means to enhance the City's community design as well as support preservation of its historic character, resources and neighborhoods.

3.1 CITY FORM

The City of Santa Clara is located in the heart of Silicon Valley within Santa Clara County, between the Santa Cruz Mountains and the Diablo Mountain range. The City is in an area of low-lying topography. Creeks are abundant, and the area has an excellent Mediterranean climate with consistently mild temperatures. Its location within Santa Clara County and the San Francisco Bay Area has made the City one of the focal points for urbanization within the region over the past century.

Located at a confluence of the region's major transportation routes, Santa Clara is well-connected and highly-accessible. Internally, however, the City is also divided by its transportation routes. The Downtown remained a locus of activity for the City until it was lost to urban renewal in the 1950s and 60s. The Station Area just east of Downtown provides a major gateway to the City. Residential areas are dotted with parks and other public spaces, and commercial facilities are generally clustered along specific corridors adjacent to the residential areas. The following sections describe in detail how the City has evolved into the major population center it is today, and how the City is physically structured.

EVOLUTION OF CITY FORM

During the eighteenth century, the area was the site of the Mission of Santa Clara, sustained by the raising of cattle and sheep. By the early nineteenth century, the area's agricultural emphasis shifted from cattle to grain production. By California's entry into the Union in 1850, Santa Clara began to lay the foundation for its transition from a rural town into a city. In 1852, Santa Clara was incorporated, and in 1866, the City platted a street system to accommodate anticipated growth; the layout still exists today as the Old Quad.

Figure 3-1 outlines the urbanized areas of the City and its surroundings over the past century. The diagrams illustrate how the City of Santa Clara has evolved from a small, contained

community of about 130 square blocks, into an 18.2-square-mile urban area that is contiguous with three adjacent cities. Located just south of where two lines of the Union Pacific Railroad meet, Santa Clara was limited to the area bounded by El Camino Real, and Lincoln and Poplar streets at the end of the 19th century. The City was surrounded on all sides by wooded and agricultural land.

Throughout the 20th century, urbanized areas of the City gradually merged with San José to the southeast, and continued to expand outward, primarily to the south and west. The City saw tremendous immigration beginning in World War II, coupled with the appearance in the 1940s of the Norman Y. Mineta International Airport east of Santa Clara's Downtown. The airport presence established an industrial character to the eastern edge of the City, and kept in check contiguous development to the northeast in San José. With the appearance of U.S 101 and Interstates 880 and 280, new urbanized areas began to appear in all directions. Development within Santa Clara began to merge with development in the cities of Campbell, Cupertino, Sunnyvale, and, later on, Milpitas.

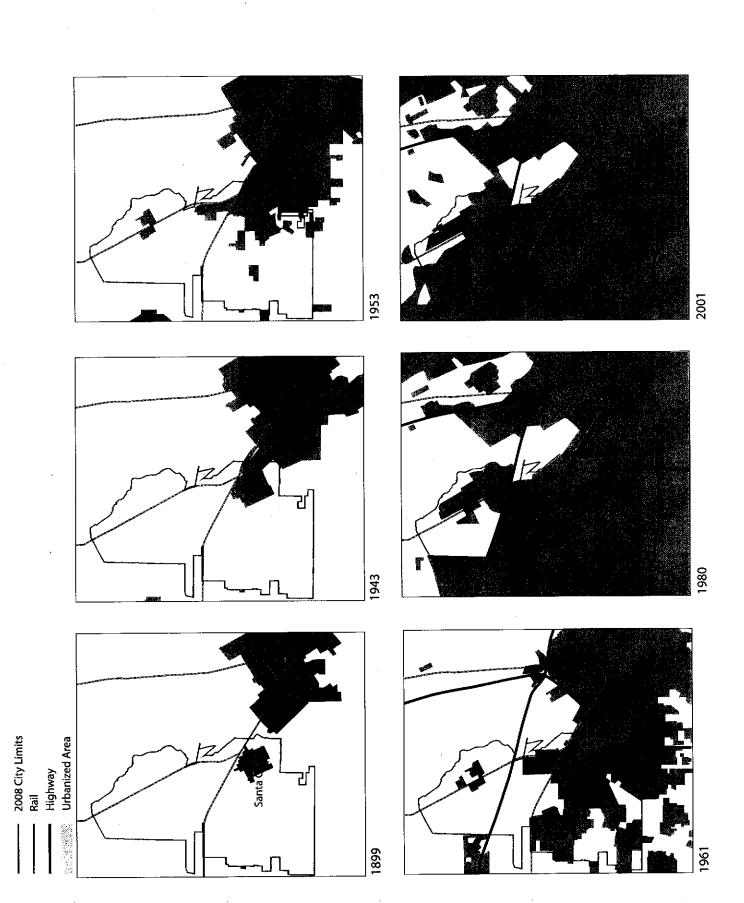
The nature and location of current development is still largely determined by the same rail lines that originally defined the City in the 19th century. The triangular-shaped area of the City between the two rail lines—which currently serve Caltrain and Capitol Corridor—contains almost entirely industrial, office, and research and development land uses. The remainder of the City to the north and south primarily contains residential and commercial uses.

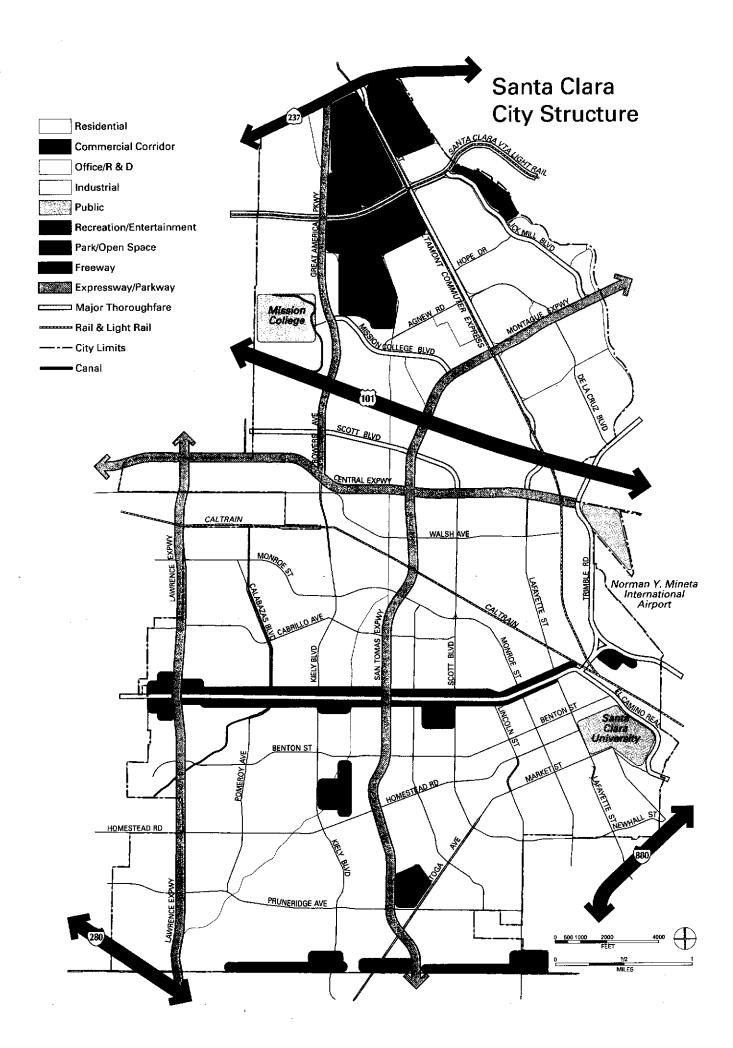
Few of the features that define the area are topographical. The Guadalupe River along the eastern border of the City has provided a natural boundary to development, and serves as a buffer between Santa Clara's residential development and San José's industrial parks to the northeast. Additionally, the alluvial sediments and Bay mud found in the northern part of the City require development to meet strict structural engineering standards. Otherwise, the City's defining features are typically built forms, such as transit corridors and public institutions.

OVERALL CITY STRUCTURE

Figure 3-2, City Structure, diagrams the overall structure and form of the City of Santa Clara. This figure illustrates the most salient feature of the City form: the fact that Santa Clara is not structured around nodes or activity centers, but is instead composed of large, distinct areas of similar or complementary land uses. The land uses in these areas are either residential (including homes, parks, and institutions) or they are non-residential (including industrial, research and development, and office). Although mixes of various land uses do exist throughout the City, the large residential or non-residential areas of the City characterize the general nature of the City's land use pattern and structure.

These distinct areas, indicated on Figure 3-2, are differentiated not only by land use, but they are also physically separated by major transportation routes, such as rail lines, U.S. 101, or auto-oriented commercial corridors. The major vehicular transportation routes—expressways, parkways, highways, and rail lines—bisect the City in all directions. With the exception of Great America Parkway, none of these major thoroughfares terminate within the City; rather, they all serve the greater South Bay region. The large area south of the Caltrain line (about 6,180 acres) is almost exclusively residential, while the area between the Caltrain line and U.S. 101 (about 2,200 acres) is almost exclusively industrial and research and development office uses. North of U.S. 101 (about 3,185 acres) shows a more integrated land use scheme, with the





majority of residential uses to the east of the Altamont Commuter Express rail line, and the majority of office uses to the west.

In addition to large areas of similar land uses, there are two major commercial corridors in Santa Clara: El Camino Real and Stevens Creek Boulevard. These corridors are critical to the City's economy, as they contain the majority of the City's retail establishments and almost all of the City's service and retail uses. With the exception of Great America and the Santa Clara Golf and Tennis Club, these corridors also contain all of the City's visitor and hotel uses. Most importantly for the City's residents, the corridors provide spines of commercial activity and east-west circulation through the large single residential section of the City.

Thus, while Santa Clara is well-integrated into the South Bay region through efficient and welldefined circulation and land use systems, the City's structure comprises more homogeneous land uses, rather than centers of mixed-use destinations. The City lacks a finite network of smaller, internal activity nodes or other structural elements that could give shape to smaller, more contained neighborhood and commercial centers.

3.2 CITY IDENTITY

The key components that shape a city's identity are those seen and experienced at the street level. This includes building design as well as the design of the streetscape and other public spaces. The design of highly visible areas also forges an identity for cities as a whole. In Santa Clara, these areas include major gateways, such as the Station Area, The Alameda, and major commercial corridors like El Camino Real and Steven Creek Boulevard. They also include various recognizable destinations and attractions, like Santa Clara University, the Old Quad, the Rivermark development, and the Great America Parkway corridor.

In the 1980s, the City adopted community-wide Design Guidelines that are intended to "provide a manual for consistent development standards in the interest of continued maintenance and enhancement of the high-quality living and working environment of the City of Santa Clara." The Guidelines cover a wide range of considerations for architectural, landscaping, site plan, and signage design for new development. Specific guidelines are articulated for six different development categories, as well as for five different design districts within the City, including the Old Quad.

In addition to the Citywide Guidelines, the City has made an effort to protect its historic legacy through building and streetscape design near the Old Quad and El Camino Real gateway. Guidelines for the El Camino Real Gateway were prepared in 1998, addressing building height and massing, architectural style, setbacks, parking and landscaping. The intent was to maintain the City's historic Mission identity, to "ensure that a consistent high quality of infill development occurs in this area" and "to create a unique sense of place within the historic Old Quad." Thus, this stretch of El Camino Real through Downtown Santa Clara would emphasize a pre-1940s design. Santa Clara University already includes a number of buildings in this style, and its new construction tends to follow suit. Likewise, many of the newer residential developments throughout the City-particularly single family developments-are in the subdued mission tones and style.







Both old and new design in the City reflect its characteristic Mission style through design, materials, and color.

Many recent building designs in other areas of the City, however, diverge greatly from the Mission style. Higher-density housing developments like the project at 550 Moreland Way, and many of the research and development office developments, for example, are often distinctly contemporary.







Many newer developments are more contemporary in style, including commercial, higher-intensity office, and high density housing.

In addition to building design and style, public spaces play an important role in determining Santa Clara's identity. These spaces include: street patterns and grid; block size; streetscape; sidewalks; landscaping and street trees; building heights, size, and scale; front and side setbacks; and location and accessibility of commercial centers, parks and other public amenities. The importance of these elements varies depending on the area or neighborhood.

EXISTING HEIGHTS

Building heights throughout Santa Clara are typically one to three stories, regardless of land use. With the exception of a few areas in the Downtown, on the Santa Clara University and Mission College campuses, and in employment zones along the expressways and parkways, few buildings exceed three stories.

Table 3-1 summarizes the height limits defined in Section 2.4 of the current General Plan. For residential land uses with no height limits, typical heights are instead determined by maximum building coverage and density.

In the Downtown, there are a few planned developments that exceed the typical height limits, and thus contribute to a denser, more "urban" character. A few taller buildings in particular stand out: the Bank of America building at Lafayette Street and Homestead Road (seven stories), and the Liberty senior housing on Main Street and Homestead Road (11 stories). On the Santa Clara University Campus, buildings are typically between one and four stories, with the exception of Swig Hall, an 11-story residence hall located on Market Street.

Land Use	Height Limit
Mixed-Use	
Mixed-Use	For sites adjacent to and within 50' of an adjacent single family property, 3 stories including parking
Transit-Oriented Mixed-Use	For sites adjacent to and within 50' of an adjacent single family property, 3 stories including parking
Single-Family Detached	None (typical is 1 and 2 stories)
Single-Family Attached	2 stories, including below-building parking
Moderate Density	2 stories, not including depressed parking areas
Medium Density	None (typical is 2 and 3 stories)
High Density	None (high-rise is allowed)
Commercial	
Convenience	35'
Convenience-S	35'
Thoroughfare Commercial	35'
Community and Regional Shopping	50'
Tourist	150'
Office	35'
Industrial	
Office/Research and Development	70' unless a rezoning to Planned Development is obtained
Industrial Transition	35'
light Industrial	70'; average 2 stories
Heavy Industrial	70'
Public Facilities	
Institutional	None
Educational, Fire, Police, Electrical Stations, Substations, Parks & Recreation, Open Space	Height shall not exceed that allowed in the most restrictive adjacent land use.
Transportation	
Transit/Station/Airport	None
Other (Special instances where a combined of	lesignation has been adopted)
Medium Density Residential and/or Parks and Recreation and/or Institutional	120'

The City's greatest concentration of tall office research and development and hotel buildings is located in the north part of the City along both sides of Great America Parkway, between Highways U.S. 101 and SR 237. Along this corridor, there are at least six buildings between five and eight stories, and at least four buildings over nine stories, with the tallest building reaching 14 stories.









Several taller buildings in the City are located downtown, like the Liberty senior housing tower and Bank of America building. However, most new taller buildings are located to the north and include both commercial and residential uses.

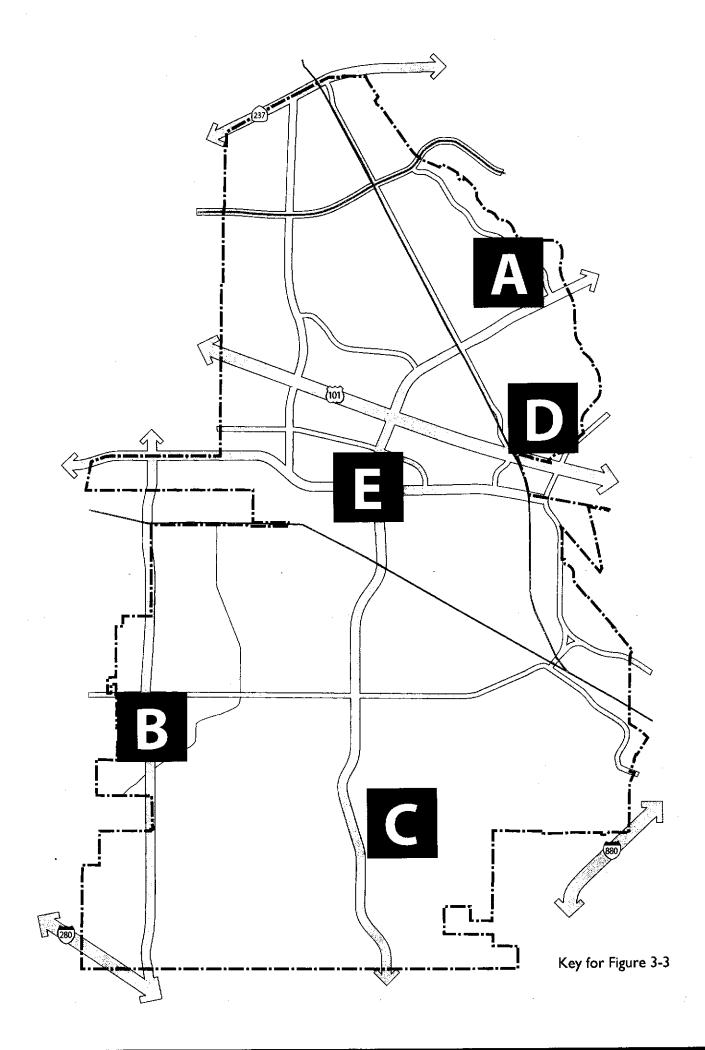
Outside of Downtown Santa Clara and the Great America Parkway corridor, few buildings rise above three stories, and those that do are scattered throughout the City. The Central Building, for example, is a lone four-story office building on Stevens Creek Boulevard near Saratoga Avenue; and the Kaiser Permanente Hospital at Homestead Road and Lawrence Expressway also reaches four stories. Rivermark also has several mid-rise residential structures. While heights in the Station Area are currently low, the heights proposed by the Station Area Plan will be comparable to those of the taller Rivermark buildings.

SCALE AND DENSITY

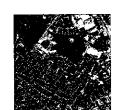
Development scale and density also contribute to the overall community design and experience within a city. Several factors determine the scale of development, including open space and building size. These elements are often related to block size and connectivity. For example, developments on large parcels can create super-blocks and fewer streets. The interplay among these elements of scale and development form is an important aspect to consider as an area evolves. The five areas analyzed in Figure 3-3 represent a range of both residential and non-residential scales and land use typologies, as well as different building eras in the City's history. The sequence of diagrams in Figure 3-3 demonstrates the different types of development in terms of block size; density; and the building-to-street interface.

GATEWAYS

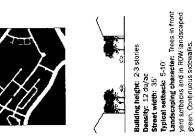
There are limited points of entry into the City of Santa Clara, and the design of these highly visible points is a key factor in shaping the City's identity. These "gateways" provide entry for traffic coming from other points of the region via public transit, as well as for vehicles, bicycles, and pedestrians. They not only establish the first visual impression of the City, but also guide residents and visitors into all other destinations within the City.



Rivermark Area A











Building height: 2-3 stories Density: 20-25 du/ac Street width: 40' Typical setback: 10-25'. Larger parcels include surface parking lots.

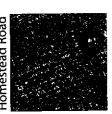
Landscaping character: Turf, trees, and other landscaping elements in front setback. Non-continuous sidewalks.

Saratoga Avenue/ Homestead Road Area C

Lawrence Expressway

El Camino Real/

Area B







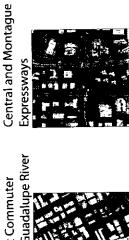






Express/Guadalupe River Altamont Commuter Area D

Area E









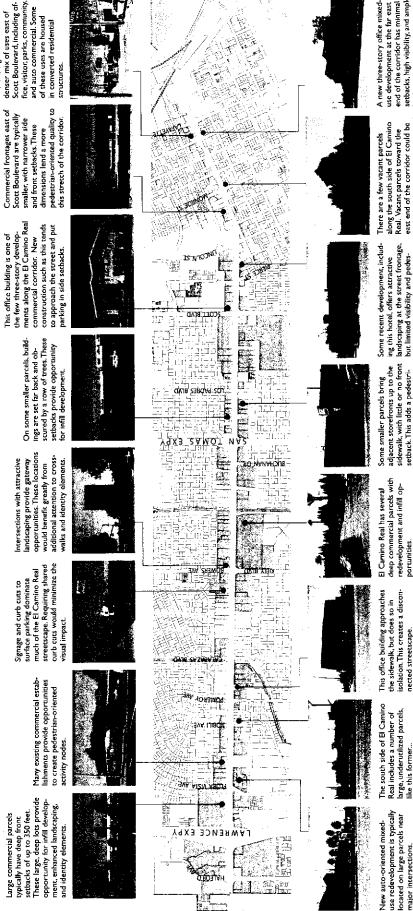








Street width: 50 bytel seback: 30.70: typically includes surface parking. Izandscaping character: Turf and/or trees in front setback. No sidewalks.



adjacent storefronts up to the sidewalk, with little or no front setback. This adds a pedestrian-oriented quality to these stretches of the corridor.

portunities.

the sidewalk, but does so in isolation. This creates a discon-

Real includes a number of large, underutilized parcels, like this former...

use redevelopment is typically

focated on large parcels near

major intersections.

nected streetscape.

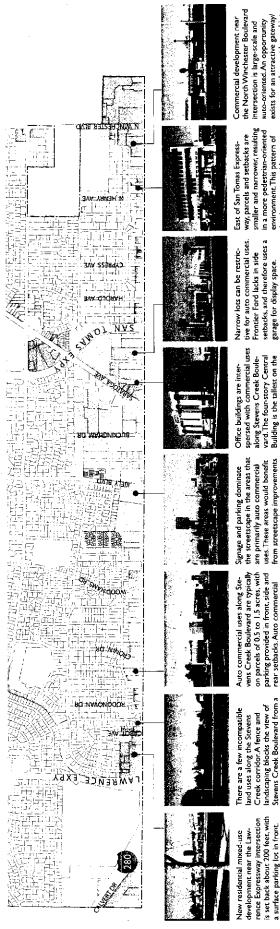
developed with greater heights and densities, to capture activity from Some recent development, including this hotel, offers attractive landscaping at the street frontage, but limited visibility and pedestrian accessibility.

downtown and the station area.

use development at the far east end of the corridor has minimal setbacks, high visibility, and ample A new three-story office mixed-

Low Density Residential	Office	Parking/ROW
Moderate Density Residential		Vacant
	Public/Institutional	Rail & Light Rail
Medium High Density Residential	Visitor/Tourist	- Creek
High Density Residential	Heavy Industrial	City Umits
Community Commercial	Light Industrial	
Service/Auta Commercial	Park/Open Space	

Figure 3-4: El Camino Real



a surface parking lot in front.
These large parking lots inhibit
pedestrian movement and limit
visibility of the commercial development near the Law-rence Expressway intersection is set back about 200 feet, with

There are a few incompatible I land uses along the Stevens Creek corridor. A fence and call andscaping blocks the view of p Stevens Creek Boulevard from a residential development, de-activating this stretch of the corridor.

Auto commercial uses along Ste-Si vens Creek Boulevard are typically the opparcels of 0.5 to 1.5 acres, with an parking provided in front, side and urear setbacks, Auto commercial if development often provides little el or no building articulation.

Signage and parking dominate C the streetscape in the areas that are primarily auto commercial a uses. These areas would benefit when streetscape improvements.

Office buildings are internance bersed with commercial uses to along Stevens Creek Boule- Fraud. The four-story Central stabiliding is the tallest on the gronnidor.

East of San Tomas Express-way, parcels and setbacks are smaller and narrower, resulting in a more pedestrian-oriented environment. This pattern of development provides opportunities for activity nodes and neighborhood centers.

Commercial development near the North Winchester Boulevard intersection is large-scale and auto-oriented. An opportunity exists for an attractive gatewayl entry onto the corridor and into

Parking/ROW	Vacant	Public/Institutional Rail & Light Rail	or/Tourist creek	Heavy findustrial ———— City Limits	Light industrial	Park/Open Space
Office	RED	2	Visitor/Tourist	ž	16FT	Parl
· Low Density Residential	Moderate Dentity Residential	Medium Density Reardential	Medium High Density Residential	High Density Residential	Community Commercial	Service/Auto Commercial

From the east, Santa Clara's major gateways for vehicular traffic are Lafayette Street and The Alameda/El Camino Real. These corridors are the first view of the City for traffic coming from San José and from Interstate 880. Integral parts of the historic Old Quad, these corridors are emblematic of the City, as they pass by the University and Downtown Santa Clara, and through some of the densest and oldest areas of the City. The Alameda is of particular interest in this regard: heading west from San José, the streetscape changes dramatically. Upon entering Santa Clara, the regularly planted trees stop, and the landscaping becomes sparse and inconsistent.



The gateway into Santa Clara along The Alameda is marked by an interruption in the consistent, lush street tree pattern established in neighboring San José.

From the north and U.S. 101, employment centers along Great America Parkway provide the major entryway into the City. The VTA light rail system passes by this area along Tasman Drive; however, the roadway is wide, indicating that the gateway corridor is primarily for auto circulation. This gateway has some of the tallest and most visible buildings in the City. It presents a strong employment presence, showcasing some of the strongest internet and technology companies in the world, like Yahoo and Nvidia. Furthermore, with its world-class building design, and its formal landscaping, it contrasts with the historic quality of the Downtown. Although it is clearly auto oriented, the height and visibility of the buildings, and the consistent landscaping create a powerful gateway image.

Gateways also include various recognizable destinations and attractions, like Santa Clara University, the Old Quad, and the Rivermark development. These destinations have varied uses, but all exhibit a specific and unified image in terms of building design: the University and the entire Old Quad area are walkable areas with a number of historically notable buildings, while the Rivermark area is designed as a self-contained mixeduse center, with contemporary and traditional building design.

Lastly, gateways also include the City's major commercial The larger-scale of both built and corridors. These important gateways, which pass through residential neighborhoods, also function as the City's economic backbones. They are discussed in the following section.



landscaped form along Great America Parkway creates a distinctive, world-class gateway into the City.

3.3 COMMERCIAL CORRIDORS

Two major commercial corridors span the City of Santa Clara: El Camino Real and Stevens Creek Boulevard. Both corridors are east-west, at-grade auto-oriented arterials that pass through several cities within the region. These corridors are integral to experiencing the City, They are destinations, and often the most convenient transit routes, for both residents and visitors. As such, the design of these corridors presents great opportunities for distinguishing Santa Clara from adjacent cities.

Currently, both corridors permit pedestrian crossings and provide frequent crosswalks; however, they are not designed to encourage pedestrian circulation and accessibility. Development along these corridors is typically too spread out to sustain much pedestrian activity or to develop a unifying identity. Additionally, these corridors—especially El Camino Real—have an inconsistent landscape design, and the buildings are often in need of renovation.

These corridors have potential for reuse and infill development, due to their high visibility, good access, and predominantly commercial nature. Large parcels are particularly agreeable to infill and intensification. Figures 3-4 and 3-5 show the land uses along these corridors, and the accompanying photos illustrate the scale of existing development, the building-to-street relationship, and the overall character along these corridors.

EL CAMINO REAL

Classified as a Thoroughfare with Landscaped Median by the current General Plan, El Camino Real has a relatively consistent curb-to-curb width of 104 feet along the entire corridor. This includes three travel lanes in each direction. As a primarily auto-oriented thoroughfare, El Camino Real does not invite pedestrian access and circulation. Existing land uses along El Camino Real are almost exclusively community commercial, service/auto commercial, and hotel or motel, with a small amount of professional office space interspersed and some recent residential and mixed-use development. Heights are generally one or two stories, with a few buildings reaching three stories.

STEVENS CREEK BOULEVARD

Stevens Creek Boulevard marks the southern border of the City of Santa Clara. It is classified as a Collector in the current General Plan, with three travel lanes in each direction with a consistent curb-to-curb width of 96 feet. Land uses along Stevens Creek Boulevard are primarily auto-oriented, with both auto services and sales. A small amount of retail and office space is also located along the corridor. Building heights are typically one to three stories.

TYPICAL DEVELOPMENT PATTERNS ALONG COMMERCIAL CORRIDORS

Parcels along the El Camino Real and Stevens Creek Boulevard commercial corridors are similarly developed based on their size. These typical patterns, land uses, and streetscapes are diagrammed below in figures 3-6, 3-7, and 3-8.

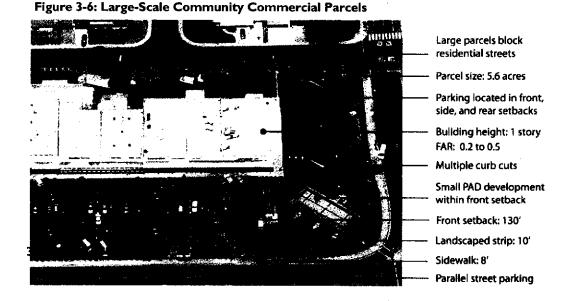


Figure 3-7: Medium Parcels



Medium-sized commercial parcels typically abut residential development

Parcel size: 0.5 - 1.5 acres

Parking located in front, side, and/or rear setbacks

Building height: 1 - 2 stories

Front setback: Typ. 20 - 100'

Curb cuts: Typ. 1 per parcel, plus one shared curb cut

Inconsistent landscaping

Sidewalk: 11'

Parallel street parking

Figure 3-8: Small Parcels



Small parcels east of Lincoln St. are part of a regular gridded block pattern.

Parcel size: 0.1 - 0.5 acres

Parking located in front, side, and/or rear setbacks

Building height: 1 story

FAR: Typ. 0.5

Curb cuts: Typ. < 1 curb cut per parcel

Front setback: Typ. 8 - 12'

Minimal or no front landscaping

Sidewalk: 8'

Parallel street parking

3.4 ACCESSIBILITY AND THE PUBLIC REALM

CONNECTIVITY AND WALKABILITY

The City of Santa Clara has a tiered transportation system connecting commercial activity nodes, residential neighborhoods, and employment centers across the City. Vehicular access is extensive and efficient; however, pedestrian and bicycle connectivity and accessibility are restricted by the City's land use patterns and transit routes. As described in Section 3.1, the City's overall structure is largely determined by the uniformity of land uses within different areas of the City. Pedestrian and bicycle accessibility is diagramed in Figure 3-9. As Santa Clara evolves, a major challenge for the City will be accessibility to the City's many amenities for non-vehicular modes of transit.

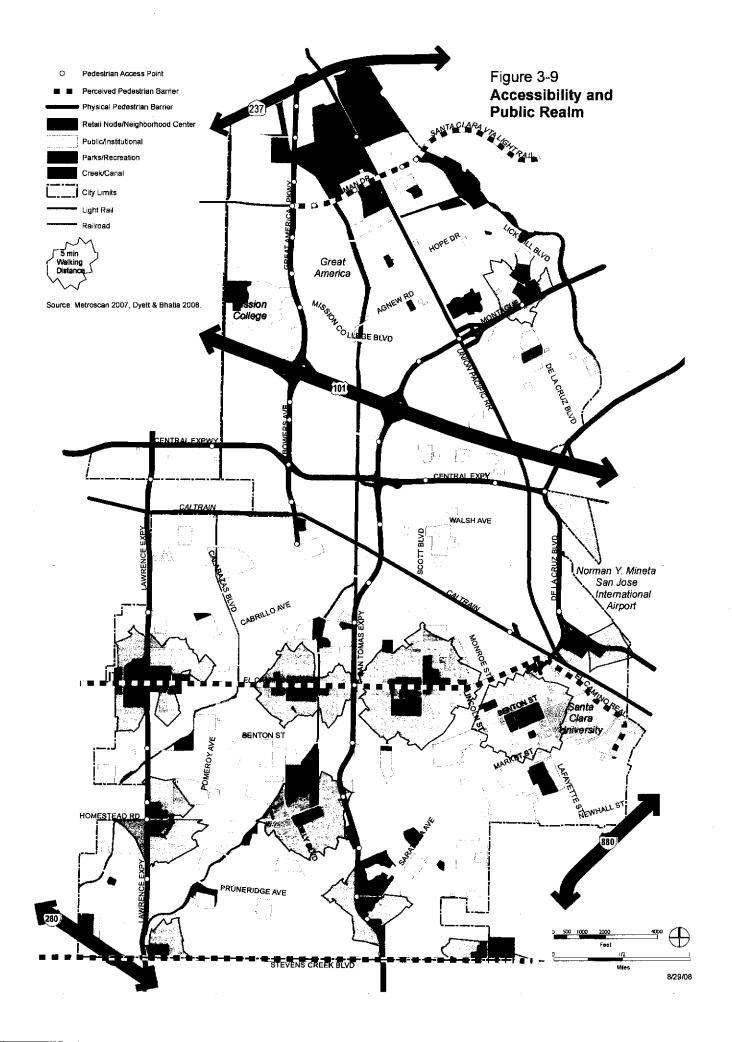
Physical Pedestrian Barriers

The network of freeways in and around Santa Clara crosses all parts of the City. These regional connectors are well-situated for vehicular access; however, they prohibit pedestrian passage, creating pedestrian and bicycle barriers. Additionally, several major at-grade expressways provide fluid vehicular access from the freeways into the City, but also serve as physical pedestrian barriers (i.e., Lawrence Expressway, Montague/San Tomas Expressway, Great America Parkway and Central Expressway). These routes typically have three to four lanes of traffic in each direction, with rights-of-way between 120 and 150 feet. On average, signalized crosswalks are provided only every 1,500 to 2,500 feet (roughly a five- to ten-minute walk). Figure 3-9 marks the locations of the crosswalks along these pedestrian barrier routes.

In addition to roadways, the City's at-grade rail lines serve as physical barriers to pedestrian and bicycle circulation. The Altamont Commuter Express/Union Pacific rail line and the Caltrain line in particular discourage pedestrian access, with only one pedestrian crossing each. For almost their entire spans across the City, these rail lines are barriers, with no sidewalks or other pedestrian amenities. The Santa Clara VTA Light Rail, which runs along the median of a four-lane road, also deters pedestrian circulation, although this corridor is punctuated by frequent signalized pedestrian crossings.

Perceived Pedestrian Barriers

Whereas freeways, expressways, and rail lines create real physical barriers to pedestrian access, the City's two major commercial corridors are generally *perceived* as barriers. El Camino Real and Stevens Creek Boulevard provide frequent signalized crosswalks and lighting; however, with rights-of-way of 100 to 120 feet lined with primarily auto-oriented uses, these corridors do not establish a pedestrian-friendly environment. Traffic speeds are typically in the 35-40 mph range, which is not significantly different from the speeds along the expressways and parkways. There is no consistent landscape scheme and few pedestrian-oriented amenities.. Thus, despite the accessibility they provide, the corridors' scale, design, and image effectively discourage pedestrian and bicycle access.



Pedestrian Access

Pedestrian and bicycle accessibility is limited in the two residential areas of the City. In these areas, the physical and perceived pedestrian barriers, frequency of crosswalks and right-of-way widths have a marked impact on the walkability and livability of the residential areas. In addition, large "super-blocks," particularly along the commercial corridors, often prevent through traffic. Winding, inefficient street patterns also limit pedestrian access. In terms of land use and building design, limited street-level activity and building wall articulation also deter residents from using sidewalks for transportation.

Figure 3-9 provides a GIS analysis of five-minute walk times from various retail nodes and neighborhood centers in different parts of the City. In areas where blocks follow a regular grid pattern, the five-minute walk distance is noticeably larger. Furthermore, slower traffic speeds of about 25 mph near Downtown contribute to a pedestrian-friendly environment. Near large, auto-oriented public destinations, like the Kaiser facility on Homestead Road and Lawrence Expressway, the walking shed is considerably reduced.

PUBLIC REALM: PARKS, SCHOOLS, AND WALKABLE CENTERS

A number of pedestrian-accessible and neighborhood-scale destinations give shape to the City's public realm. Figure 3-9 shows the City's major commercial centers, parks and other public destinations, and shows their proximity to transit routes and residential neighborhoods. These public destinations include commercial nodes and the Station Area node. Additionally, it includes parks and open spaces, as well as public destinations, such as schools and hospitals.

Figure 3-9 also shows that Santa Clara's major commercial destinations are located either Downtown or along major transportation routes or corridors. This illustrates that many residential areas may be underserved by retail and commercial uses. Alternately, it shows that the City's parks, open spaces, and schools are evenly scattered in the two major residential areas, and that the City's neighborhoods are well-served by open and public spaces.

3.5 HISTORIC RESOURCES AND PROGRAMS

The City of Santa Clara is a Certified Local Government agency (CLG). It is, therefore, obligated to meet certain State and federal requirements including:

- Enforcing appropriate state and local laws and regulations for the designation and protection of historic properties;
- Establishing an historic preservation review commission by local ordinance;
- Maintaining a system for the survey and inventory of historic properties;
- Providing for public participation in the local preservation program; and
- Satisfactorily performing other responsibilities delegated to it by the State.

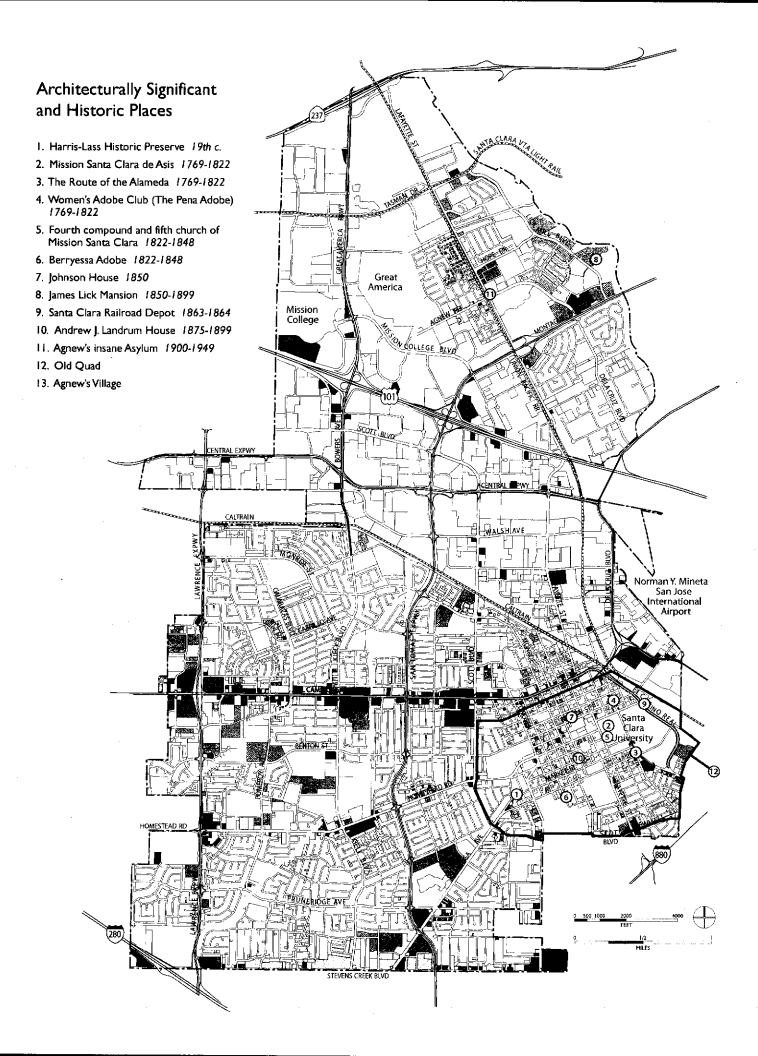
The City's Historical and Landmarks Commission advises the City Council on all matters related to historical landmarks and places including researching and reviewing significant sites, placing historical markers, and designating street names. The City's Municipal Code includes both restrictions and incentives to promote the preservation of Santa Clara's historic landmarks. As required by the Certified Local Government program, the City has established a List of Designated Architecturally and/or Historically Significant Properties. This List, which primarily includes historic sites within the old Quad area, is based on the 1981 City of Santa Clara Historic Survey. It has been updated to indicate sites that have been rezoned under the Historic Combining District designation, and also indicates structures that have been demolished. On an ongoing basis, the Historical and Landmarks Commission evaluates the List for possible updates, and reviews the List for consistency with the historic character and neighborhood integrity of surrounding properties.

The City actively participates in the State's Mills Act Property Tax Abatement Program, which provides tax benefits to owners who pledge to rehabilitate and maintain the historical architectural character of their properties. Structures included on the City's List of Designated Properties and on any federal, state, or county register are eligible for tax benefits under the program. In November 2004, the City Council deferred a decision on a proposed ordinance and design guidelines that would have designated the Old Quad and surrounding area (generally bounded by Newhall Street, Scott Boulevard, and the Railroad) as an Historic Conservation District. The ordinance would have established an overlay zone and design guidelines for this area with provisions for the maintenance and rehabilitation of historic homes.

HISTORIC RESOURCES

Figure 3-10 identifies the names, dates, and locations of significant properties in the City of Santa Clara, including all the properties on the List of Designated Architecturally and/or Historically Significant Properties and properties listed on the National and State Registers. The City does not currently have an inventory of sites not yet designated but potentially significant. The majority of the properties on this figure are located within the Old Quad, and date to the 18th and 19th centuries. Also outlined in the figure is the boundary of the Old Quad area itself. For the purposes of the General Plan, the Old Quad is defined as that area southerly of Lewis Street, easterly of Scott Boulevard, northerly of Newhall Street, and westerly of the CalTrain railroad tracks. Formally surveyed in a grid pattern in 1866, the entire Old Quad is itself considered to be a historically significant area.

Agnews Village is the one historically significant landmark on the List of Designated Architecturally and/or Historically Significant Properties located outside of the Old Quad. Three miles north of the Old Quad, this area was once the Town of Agnews, before becoming incorporated into the City of Santa Clara. Between 1878 and the 1960s, Agnews Village became the site of an historic railroad depot, small wooden vernacular residences, bungalows, and small ranch style homes. Taken as a whole, the site reflects perfectly the crossroads town of the late 19th century in Santa Clara County.



Agnews Village was also home to the Agnews Insane Asylum, a grouping of numerous reinforced concrete, brick, stucco and tile buildings constructed in large rectangular-shaped plans and designed in a Mediterranean Revival style. The asylum opened in 1889, was redesigned following the earthquake of 1906, and eventually closed and relocated to San José in the 1970s. When the west campus of Agnews Village closed, the State sold an 82.5-acre portion of the land to Sun Microsystems. This area included several historic buildings (the auditorium, the clock tower, the superintendent's villa, and the administration building), which have been preserved and are open as a historic resource to the public.

Three of the sites shown on Figure 3-10 are not on the List of Designated Architecturally and/or Historically Significant Properties List, but are listed on the National Register of Historic Places, State Listings. These sites are the Agnews Insane Asylum (added to the Register in 1997), the Andrew J. Landrum House, and the James Lick Mill Mansion (both added in 1982).







The Agnews Insane Asylum, Andrew J. Landrum House, and James Lick Mill Mansion are all on the National Register of Historic Places and key landmarks within the City.

SANTA CLARA GENERAL PLAN AND ZONING UPDATE

This page intentionally left blank.



Transportation Systems and Circulation

The following section provides an overview of existing transportation systems in the City of Santa Clara, placed within the context of the goals, policies and objectives outlined in the existing General Plan last updated in 2002. The description of existing transportation conditions includes an analysis of traffic operations at 13 study intersections and an overview of pedestrian, bicycle, and public transit circulation.

4.1 RECENT TRENDS AND PLANNING EFFORTS

POLICY FRAMEWORK

The City's last General Plan update recognized that increased transportation demand could not be accommodated by adding roadway capacity alone. A key goal outlined in the General Plan is "to strive to provide a safe and convenient integrated transportation system which moves people and goods from place to place efficiently and in a cost effective manner." The Transportation Element (Section 4.14.2) of the City's General Plan contains the following transportation policies:

- Maximize the existing investment in roads. Make improvements to local thoroughfares within the existing right-of-way or adopted plan lines as warranted by demand and where cost effective.
- Support efficient and effective use of revenue sources to adequately meet transportation needs.
- Encourage highway improvements only where missing links, inadequate widths and at-grade intersections impede traffic flow.
- Minimize the number of automobiles used in commuting.
- Promote increased vehicle occupancy during commute hours. Promote measures to decrease the percentage of local employees commuting alone in their automobiles.
- Support a transit system that provides enhanced commuter service.
- Support a coordinated transit system that circles the South Bay and the Peninsula.
- Support the County's effort to provide transit service to dependent populations such as the disabled, elderly, children, and those who cannot drive.
- Encourage the use of bicycles and walking as alternatives to driving
- New overpasses and interchanges should be designed to accommodate bicycles and pedestrians.

REGULATORY FRAMEWORK

The City of Santa Clara has jurisdiction over all City streets and City-operated traffic signals. The U.S. 101, State Route (SR) 237, Interstate 280 (I-280) freeways, their ramps and SR 82 (El Camino Real) are under the jurisdiction of the State of California Department of Transportation (Caltrans). The County has jurisdiction over the expressway network including Lawrence, San Tomas/Montague, and Central Expressways. The Santa Clara Valley Transportation Authority (VTA) is an independent special district responsible for congestion management, specific highway improvement projects, countywide transportation planning, and bus and light rail operations in Santa Clara County.

The VTA is the Congestion Management Agency (CMA) for jurisdictions within the County and sets the State and federal funding priorities for improvements affecting Congestion Management Program (CMP) facilities. CMP facilities in Santa Clara include U.S. 101, SR 237, I-280, Lawrence Expressway, San Tomas Expressway, Central Expressway, Great America Parkway, El Camino Real, and Stevens Creek Boulevard. In Santa Clara, the VTA provides fixed-route bus, light rail, and paratransit service.

The regional transportation planning agency for the San Francisco Bay Area is the Metropolitan Transportation Commission (MTC), which is the clearinghouse for both State and federal funds for transportation improvements. Each county's CMA, including the VTA, forwards their Capital Improvement Project (CIP) list to MTC for review. MTC prepares the regional priority list based on input from all nine Bay Area counties and submits it to the California Transportation Commission (CTC) and/or the Federal Highway Administration (FHWA) for funding.

RECENT TRENDS

The surge in research and development and office development in the past ten to fifteen years in Santa Clara is testament to the City's success in achieving key General Plan goals to take advantage of the City's central location in Silicon Valley and proximity to regional transportation facilities. The region, however, has not been as successful in avoiding a vehicleoriented circulation system at the expense of alternative modes of transportation along key corridors.

TRAVEL MODES

City of Santa Clara residents use a variety of travel modes. Table 4-1 compares the commute characteristics of Santa Clara residents to those of Santa Clara County. According to the 2000 Census data, the majority of work trips (78 percent) are made by single-occupant vehicles. This is similar to the County average of 77.3 percent. Carpools/vanpools or ridesharing comprises the second highest share at 11.4 percent. Transit usage is 2.9 percent, and bicycle and pedestrian trips comprise less than five percent of total commute trips. The rate of transit use is slightly lower than the County average of 3.5 percent.

Table 4-1: Journey to Work Travel Characteristics

Travel Characteristics	Santa Clara Residents	Santa Clara County Residents	
Drive Alone	78.3%	77.3%	
Carpool	I I . 4%	12.2%	
Public Transit	2.9%	3.5%	
Bicycle	1. 4 %	1.2%	
Walk	3.2%	1.9%	
Other Means	0.3%	0.6%	
Work at Home	2.3%	3.1%	

Source: U.S. Census, 2000.

Most of the City's employment is located in the northern part of the City, between the Southern Pacific Railroad/Caltrain tracks and SR 237. The residential areas in the City are located primarily in the southern portion. Existing commute travel patterns are northbound during the morning peak period and southbound during the evening peak period. Based on the 2000 Census, approximately 30 percent of City of Santa Clara residents work in the City of Santa Clara. Table 4-2 summarizes where Santa Clara residents work (if not in Santa Clara) and where Santa Clara employees live. The majority of employees who work in Santa Clara reside in Santa Clara County (77 percent), with most of them living in San José (45 percent).

Table 4-2 Home Based Work Trips

	Santa Clara Residents	Santa Clara Non Resident Employee		
To or From	(Place of Employment)	(Place of Residence)		
San Jose	39%	45%		
Sunnyvale	16%	10%		
Mountain View	8%	3%		
Cupertino	6%	3%		
Milpitas	5%	3%		
Palo Alto	6%	2%		
Other Santa Clara County	7%	11%		
Fremont	3%	5%		
San Mateo County	6%	6%		
Other	4%	12%		

Source: U.S. Census, 2000.

Most of the City streets are fully improved with limited opportunity for widening to accommodate future traffic volumes. These wide roadways throughout the City also reduce the City's overall walkability due to increased crossing distances and narrower sidewalk widths. Recently, the City has focused on improving bicycle circulation with an update to the Bicycle Plan in 2003.

Recent Planning Efforts

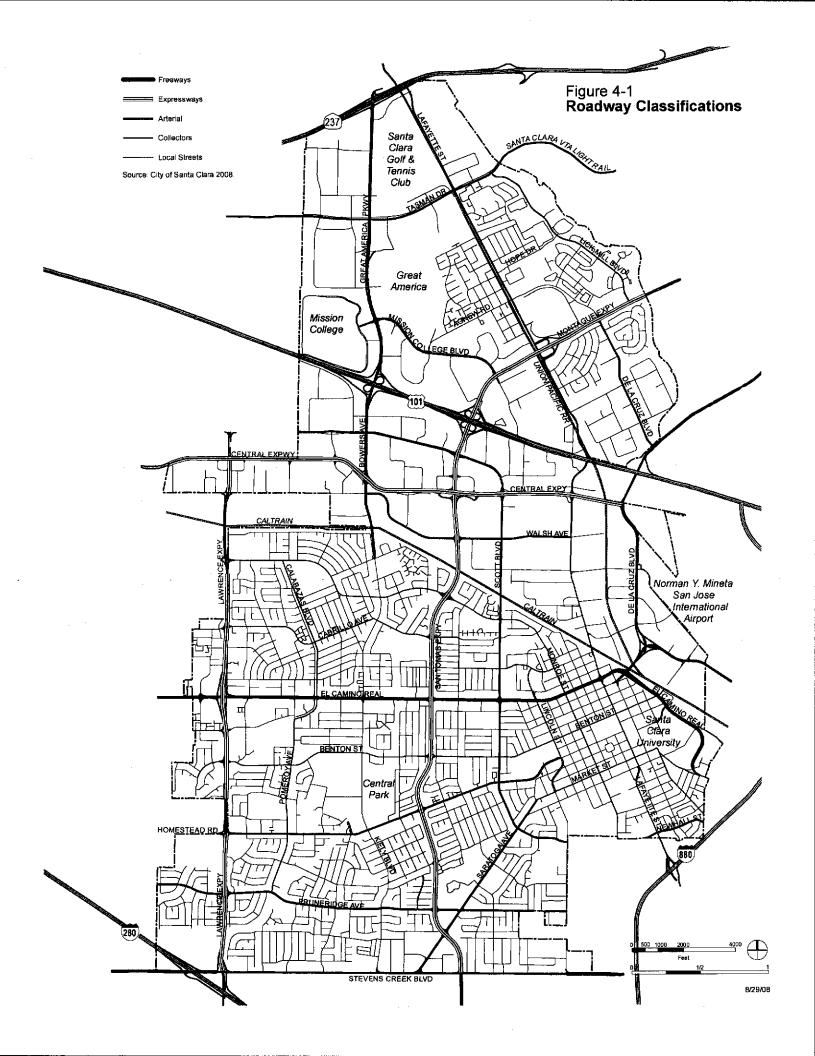
Complementing recent efforts to improve alternate modes of travel in the City, several recent planning efforts have focused on walkability and connectivity to transit. In the northern part of the City, large residential developments (primarily Rivermark) have located residents closer to employment areas. Additionally, the City is working with the City of San José and VTA on the Santa Clara Station Area Plan that would locate residential and mixed-use commercial and office development around the future BART Station and existing Santa Clara Caltrain Station.

4.2 STREET HIERARCHY AND CLASSIFICATIONS

The vehicular circulation system in the City of Santa Clara includes a wide network of surface streets. The street system serves two distinct, and equally important, functions: providing access to adjacent properties, and moving persons and goods through the City and the surrounding area.

A functional classification system provides a hierarchical framework for the design and operation of the street system. Generally, streets designed to carry large volumes of vehicles into and through a city have more lanes, higher speed limits, and fewer driveways. Local streets have fewer lanes, lower speed limits, and more driveways providing access to fronting properties. The Santa Clara roadway system has five functional street types: freeways, expressways, major and minor arterials, collector streets, and local streets. Figure 4-1 displays the current street network and functional classification of the City's street system.

- Freeways are limited access, high-speed travelways included in the State and Federal Highway systems. Their purpose is to carry regional through traffic. Access is provided by interchanges with typical spacing of one mile or greater. No access is provided to adjacent land uses. The existing freeways in the City are:
 - U.S. 101
 - State Route (SR) 237
 - Interstate 280 (I-280)
- Expressways are high speed, limited-access streets designed to facilitate the movement of high traffic volumes. Expressways are designed to serve both regional through and local traffic and, ideally, connect other regional roadways and freeways. The expressways serving the City of Santa Clara are:
 - Lawrence Expressway
 - San Tomas/Montague Expressway
 - Central Expressway
- Major and Minor Arterial Streets are major streets that primarily serve through traffic and provide access to abutting properties as a secondary function. Arterials are generally designed with two to six travel lanes plus left-turn lanes and traffic signals at key intersections. This roadway type is divided into two categories: major and minor arterials.



- Major arterials typically have four or more travel lanes and serve both local and through traffic. Minor arterials are typically two- to four-lane streets and serve local and commute traffic.
- Examples of major arterials are:
 - De La Cruz Boulevard
 - Mission College Boulevard
 - Tasman Drive
 - Kiely Boulevard/Bowers Avenue
 - Scott Boulevard
 - El Camino Real
- Minor arterials include:
 - Lafayette Street
 - Homestead Road
 - Pruneridge Avenue
- Collector Streets are defined as streets that provide land access service and traffic circulation within residential neighborhoods, commercial, and industrial areas. Collector Streets penetrate residential neighborhoods, distributing trips from the arterials through the area to the ultimate destination. They usually collect traffic from local streets in residential neighborhoods and channel it into the arterial system. Certain collector streets, such as those with fronting commercial development, high-density multi-family units or wide widths may accommodate higher traffic volumes, while those with narrower widths or serving low-density residences or schools may have lower traffic volumes.
- Examples of collector streets in the City of Santa Clara are:
 - Cabrillo Avenue
 - Monroe Street
 - Market Street
 - Lincoln Street
- Local Streets are defined as streets that primarily provide access to adjacent lowerintensity land uses. Local streets provide service over relatively short distances as compared to collector streets. They allow access to residential driveways and often provide parking for the neighborhood. They do not typically serve as through traffic routes between neighborhoods. In addition to these street types, alleys are located at mid-block locations in the City and provide access to adjacent properties.

All public streets in Santa Clara that are not designated as expressways, major arterials, minor arterials or collectors are considered local streets. Traffic is controlled at intersections of two or more streets with a program of traffic signals and stop signs. Traffic signals, which are the traffic control devices used at those locations where the volumes are sufficiently high to warrant their installation, help provide a systematic and organized flow of traffic, providing safety and order for pedestrians and vehicles using City streets. The City also uses stop signs to control many of its intersecting local or residential streets. Stop signs, like traffic signals, assign rightof-way at an intersection so that traffic flows smoothly and predictably.







Santa Clara contains a network of street types from freeways and expressways (left), to major and minor arterials (center) to collector and local streets (right).

4.3 TRAFFIC CONDITIONS AND LEVELS OF SERVICE

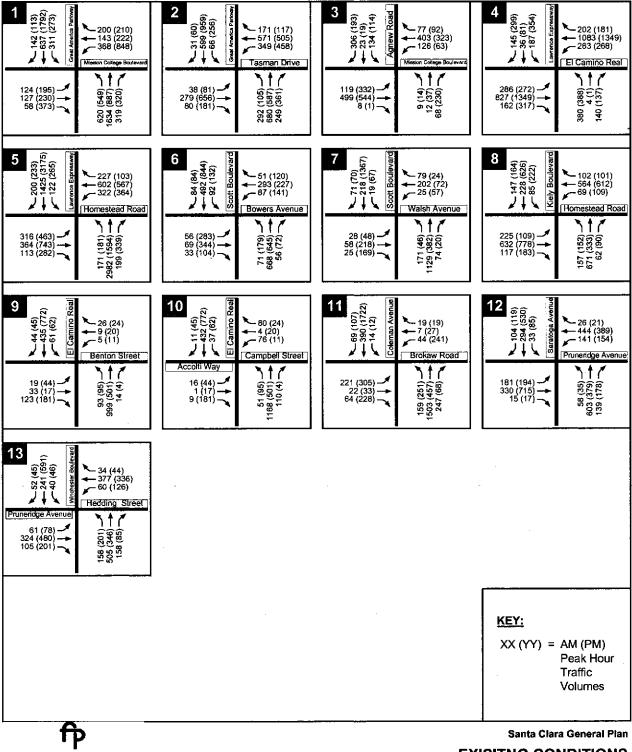
Existing traffic volumes were established with traffic counts conducted in 2007 and 2008. Current daily traffic volumes for the City's major streets are presented on Figure 4-2, and Figure 4-3 illustrates peak-hour volumes at 13 key intersections throughout the City. Daily traffic volumes are used to identify the required number of travel lanes on roadway segments; however, intersections represent the constraint points of the roadway system. Thus, intersection peak hour volumes are a better indicator of roadway operations.

Level of service (LOS) is a concept used to evaluate the operating conditions of the flow of traffic on a street segment or through an intersection based on the volume of traffic that uses the facility as compared to the facility's capacity. LOS categories range from excellent, nearly free-flow traffic at LOS A to overloaded, stop-and-go conditions at LOS F. The LOS definitions are provided in Table 4-3. The LOS definitions shown in the table represent average conditions for all vehicles at an intersection across a one-hour period. The table provides the relationship between the average control delay per vehicle for the intersection and its associated LOS. The City of Santa Clara has established a minimum acceptable operating level of LOS D for the City's intersections.

Five of the intersections in Table 4-4 are included in the Santa Clara County Congestion Management Program (CMP). CMP-designated intersections have regional significance and are monitored biennially by the Valley Transportation Authority, the congestion management agency for Santa Clara County. In addition to monitoring, VTA staff reviews transportation impact analysis reports from local agencies to evaluate the potential for transportation impacts. The minimum acceptable operating standard for CMP intersections is LOS E.

The results in Table 4-4 show that all but three of the intersections are currently operating at LOS D or better during both the AM and PM peak hours. The intersections of Great America Parkway/Mission College Boulevard, Lawrence Expressway/Homestead Road, and Coleman Avenue/Brokaw Road are operating at LOS E during the PM peak hour. In general, field observations conducted in June 2008 corroborate the results of the level of service calculations.





FEHR & PEERS TRANSPORTATION CONSULTANTS

EXISITNG CONDITIONS PEAK HOUR TRAFFIC VOLUMES Some cities have addressed increasing congestion by adopting LOS standards that permit higher congestion levels in their downtown areas or in other specific locations. The City of San José has adopted a level of service policy that exempts specific protected intersections from the adopted LOS standard in order to recognize that certain intersections are built to their maximum capacity and that no additional widening is possible without adverse impacts to bicycle, pedestrian and transit travel. Other cities in California, such as Oakland, Sacramento, Antioch, Napa, and Menlo Park, have taken similar actions and have adopted standards permitting greater congestion in their downtown areas or within designated pedestrian zones.

Table 4-3 Signalized Intersection Level of Service Definitions

		Average Control Delay	
Level of Service	Description	(seconds per vehicle)	
A	Operations with very low delay occurring with favorable progression and/or short cycle lengths.	≤ 10.0	
B+	Operations with low delay oc-	10.1 to 12.0	
В	curring with good progression	12.1 to 18.0	
B-	and/or short cycle lengths.	18.1 to 20.0	
C+	Operations with average delays	20.1 to 23.0	
С	resulting from fair progression	23.1 to 32.0	
C-	and/or longer cycle lengths. Indi- vidual cycle failures begin to ap- pear.	32.1 to 35.0	
D+	Operations with longer delays	35.1 to 39.0	
D	due to a combination of unfavor-	39.1 to 51.0	
D-	able progression, long cycle lengths, and high V/C ratios. Many vehicles stop and individual cycle failures are noticeable.	51.1 to 55.0	
E+	Operations with high delay values	55.1 to 60.0	
E	indicating poor progression, long	60.1 to 75.0	
E-	cycle lengths, and high V/C ratios. Individual cycle failures are frequent occurrences.	75.1 to 80.0	
F	Operations with delays unaccept- able to most drivers occurring due to over-saturation, poor progression, or very long cycle lengths.	>80.0	

Source: Traffic Level of Service Analysis Guidelines, VTA Congestion Management Program, June 2003; Highway Capacity Manual, Transportation Research Board, 2000.

Table 4.4 Existing Conditions Intersection Levels of Service

	Peak			
Intersection	Hour	Count Date	Delay	LOS
Great America Parkway/Mission College	AM	4/24/2008	C-	32.8
Boulevard ¹	PM	4/24/2008	E	72.9
2. Great America Parkway/Tasman Drive	AM	4/24/2008	D	40.9
	PM	4/24/2008	D-	51.5
3. Agnew Road/Mission College Boulevard	AM	4/24/2008	C+	20.7
	PM	4/24/2008	C+	22.3
4. Lawrence Expressway/El Camino Real	AM	4/22/2008	С	28.1
	PM	4/22/2008	C	29.5
5. Lawrence Expressway/Homestead Road	AM	10/24/2007	D-	51.3
	PM	10/24/2007	E	61.2
6. Bowers Avenue/Scott Boulevard	AM	4/24/2008	С	31.4
	PM	4/24/2008	D	39.4
7. Scott Boulevard/Walsh Avenue	AM	4/24/2008	C+	21.0
	PM	4/24/2008	Ċ	23.1
8. Kiely Boulevard/Homestead Road	AM	1/24/2008	С	31.4
	PM	1/24/2008	С	31.5
9. El Camino Real/Benton Street	AM	4/24/2008	В	17.8
	PM	4/24/2008	С	23.7
10. El Camino Real/Campbell Avenue-Accolti	AM	4/24/2008	В+	10.3
Way	PM	4/24/2008	В	17.6
II. Coleman Avenue/Brokaw Road	AM	4/24/2008	С	25.8
	PM	4/24/2008	Ē	62.4
12. Saratoga Avenue/Pruneridge Avenue	AM	4/24/2008	С	24.1
-	PM	4/24/2008	C+	21.1
13. Winchester Boulevard/Pruneridge Avenue-	AM	4/24/2008	D-	53.3
Hedding Street	PM	4/24/2008	Č-	34.4
Designated CMP intersection.				

Source: Fehr & Peers, 2008.

4.4 PEDESTRIAN CIRCULATION

Pedestrian facilities improve safety and encourage the use of alternative modes of transportation. These facilities include sidewalks, paths, pedestrian bridges, crosswalks, and pedestrian signals with crosswalks at signalized intersections to accommodate pedestrian circulation. In California, it is legal for pedestrians to cross any street, except at unmarked locations between immediately adjacent signalized crossings or where crossing is expressly prohibited. Marked crossings reinforce the location and legitimacy of a crossing. In pedestrianfriendly cities, crossing locations are treated as essential links in the pedestrian network. The City does not currently have a Pedestrian Master Plan.

The following programs, policies and practices are currently implemented in Santa Clara:

- General Plan policies to "encourage the use of bicycles and walking as alternatives to driving" and "new overpasses and interchanges should be designed to accommodate bicycles and pedestrians."
- Industrial Sidewalk program to install sidewalks in the industrial areas north of the Caltrain tracks.
- Requirement for all new developments to install sidewalks, street trees, and lighting in accordance with the standards as shown in Table II of its Property Development Ordinance.







Pedestrians have access to the San Tomas Aquino/Saratoga Creek Trail (left) and pleasant streets in new master planned community (center). However, there is room for improvements to sidewalks and streetscapes along arterial streets (right).

4.5 **BICYCLE MOVEMENT**

Bicycle facilities include bike paths, bike lanes, and bike routes. Definitions of these facility classifications are presented below.

- Bike Paths (Class I). Bike paths are paved facilities designated for bicycle use that are physically separated from roadways by space or a physical barrier.
- Bike Lanes (Class II). Bike lanes are lanes on the outside edge of roadways reserved for the exclusive use of bicycles, and designated with special signage and pavement markings.

• Bike Routes (Class III). Bike routes are roadways recommended for bicycle use and often connect to bike lanes and bike paths. Routes are designated with signs only and may not include additional pavement width.

An additional type of bikeway that is appropriate for urban environments is the Bicycle Boulevard, generally a modified Class III route in which cars are allowed but bicycles have priority, and where bicycles have a relatively stop-free, low-conflict route to their destinations. Examples of modified Class III standards include the use of pavement stencils (commonly used in San Francisco) that are placed on the pavement of shared lanes to remind motorists of the presence of cyclists.

The first Bicycle Boulevard was built on Bryant Street in Palo Alto in 1982 along a two-mile stretch of residential street. All-way stops or signalized intersections were installed at intersections with collector or arterial streets and stop signs along the main route were removed so that minor-street stops at the cross streets could be installed instead. Traffic diversions were placed at strategic locations along the street so that bicycles, pedestrians, and emergency vehicles could use the route, but motor vehicles could not. Motor vehicle traffic stayed relatively constant, indicating that traffic was not diverted to other streets.

Santa Clara has a limited number of bicycle facilities; however, bicycles are allowed on expressways. Figure 4-4 depicts the locations of the existing bike lanes, paths, and routes. The paths shown on Figure 4-4 are multi-use trails and serve both bicycles and pedestrians.



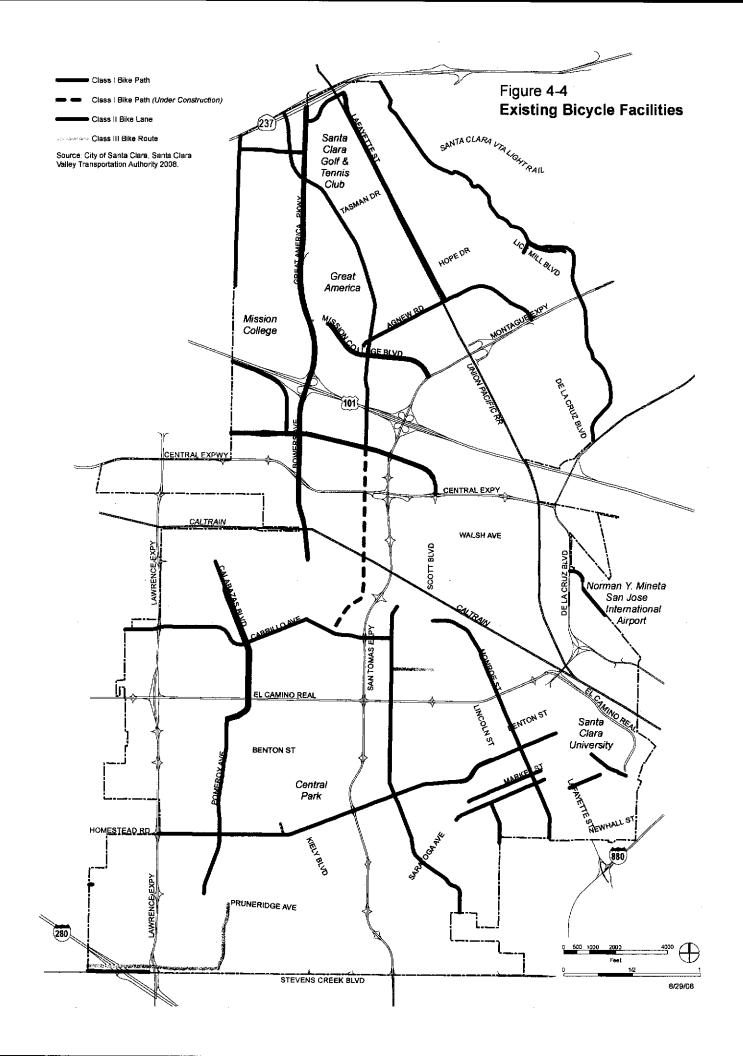




The San Tomas Aquino/Saratoga Creek Trail also offers a Class I bike path where cyclists can enjoy their own right-of-way (left). The rest of the City is not well-covered by bike paths or bike lanes (center and right). A wider network of lanes and infrastructure, such as bike racks, will be needed in order to increase bicycle use and safety in the City.

The City is currently updating its Bicycle Plan. The primary goals of the existing plan are:

- Provide a safe, efficient bicycle network that improves bicycle access and mobility throughout the City by removing obstacles, implementing bicycle facilities, and enforcing laws related to bicycle travel.
- Create a policy framework and action program to enhance bicycling as a viable transportation choice, particularly for commutes and errands under 5 miles.
- Implement a citywide network of bikeways connecting activity centers, schools, employment districts, and neighborhoods that also integrates regional routes in the VTA's Countywide Bicycle Plan.



The City's Bicycle Plan identified freeways, expressways, and railroad tracks as obstacles for continuous north-south bicycle travel. The Plan calls for three major north/south corridors: Kiely Boulevard/Bowers Avenue/Great America Parkway, Scott Boulevard/San Tomas Aquino Creek, and a special study corridor along Lafayette Street and three major east/west corridors: Stevens Creek Boulevard from Cronin Drive to the eastern border, Pruneridge Avenue, and Homestead Road from the western border to Lafayette Street.

Bicycle parking and support facilities are an important component of bicycle travel. Lack of bicycle storage and amenities such as showers can discourage cycling. The Bicycle Plan contains the following two policies related to bicycle parking and support facilities:

- Provide and promote secure and conveniently located safe, short-term and sheltered long-term bicycle parking at destinations throughout the City of Santa Clara.
- Provide other end-of-trip facilities for cyclists where possible.

4.6 PUBLIC TRANSIT

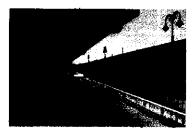
Existing public transit service within the City is provided by VTA and consists of bus, light rail transit, and paratransit service. Commuter rail lines stopping at the Santa Clara Station include Caltrain, operated by the Peninsula Joint Powers Board, and Altamont Commuter Express (ACE), operated by the San Joaquin Regional Rail Commission. In addition, Amtrak California provides limited Thruway Motorcoach service to the station. These services are shown in Figure 4-5 and described in this section.

- VTA. Bus transit service within the City includes ten local routes (10, 22, 23, 32, 44, 55, 57, 58, 60, and 81), four limited stop routes (304, 321, 328, and 330), two express bus routes (140 and 141), and one rapid transit route (522 on El Camino Real). Light rail service is provided along Tasman Drive with three stops in the City—Old Ironsides, Great America, and Lick Mill.
- Paratransit service is operated under contract with OUTREACH, a private, non-profit paratransit broker. This door-to-door service is provided to riders whom meet the eligibility requirements established by the Americans with Disabilities Act (ADA).
- Caltrain. Service operates between San Francisco in the north and San José in the south, with limited weekday peak period service to Gilroy. Most limited-stop and all local trains stop at Santa Clara Station. Baby Bullet trains bypass the station. Service operates weekdays with 30-minute headways and weekends with 60-minute headways. Evening service operates daily every 60 to 120 minutes. There are 64 weekday trains serving the station, with 32 trains on Saturdays and 28 on Sundays. Exactly half of the trains operate northbound and southbound. In Caltrain's Short Range Transit Plan Fiscal Years 2008-2017, electrification of the system is expected to occur by 2014 and the number of weekday trains will increase from 98 to 110.
- ACE. Service operates weekdays only between Stockton in the east and San José in
 the west, with stops at the Great America and Santa Clara Stations. Currently, service to the Santa Clara Station is suspended during construction work on the tracks
 and is being supplemented with bus service. Four trains provide westbound service

during the AM peak period and four trains provide eastbound service during the PM peak period, with 60-minute headways in both directions. ACE provides additional bus service along its route in conjunction with Amtrak California.

- Amtrak California (State funded). San Joaquin bus service operates between Stockton in the east and San José in the west, with stops at the Great America and Santa Clara Stations on selected trips. One westbound bus in the morning and two eastbound buses in the afternoon stop at the station daily. Weekday service doubles as the ACE bus service.
- Capitol Corridor. Train service operates between Auburn in the Sierra Foothills to downtown San José. Weekday and weekend service includes seven southbound and seven northbound trains with a stop at the Great America Station. There are currently no scheduled stops of the Capitol Corridor trains at the Santa Clara Station.
- Amtrak (federally funded). Coast Starlight train service operates between Seattle, Washington and Los Angeles, California. One northbound and one southbound train pass through the City each day. There are no scheduled stops at the Great America or Santa Clara Stations.

In 2000, the voters of Santa Clara County passed Measure A, a half-cent sales tax, to connect Bay Area Rapid Transit (BART) commuter rail line from Fremont through San José to terminate in Santa Clara at the Santa Clara Caltrain station. The project is currently in the engineering phase with service expected to begin in 2016. The measure also includes funding a people mover system connecting the future BART/Caltrain station with the Norman Y. Mineta International Airport.



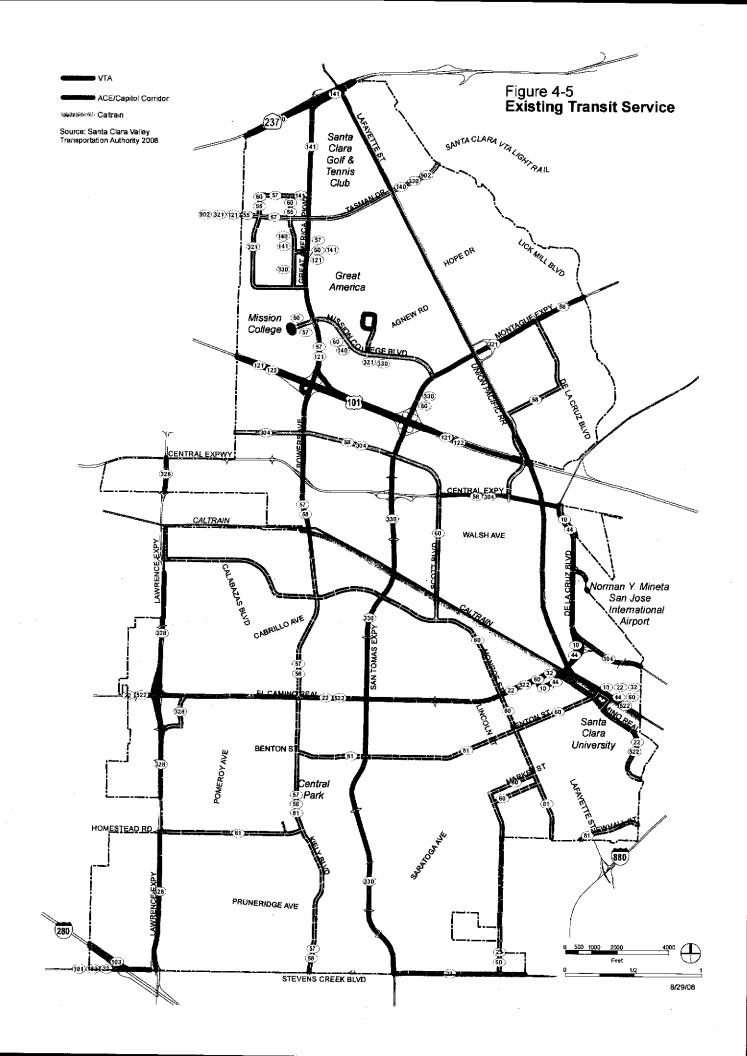




Santa Clara is served by several transit providers, including Amtrak, Caltrain, ACE, Capitol Corridor, and VTA light rail and bus. The proposed BART extension would also serve the City at the Santa Clara Transit Center.

4.7 RAIL AND FREIGHT MOVEMENT

The railroad tracks carry a limited number of freight trains per day in addition to regularly scheduled passenger service. Union Pacific Railroad (UPRR) retains the right to provide freight operations within the JPB/Caltrain right of way. UPRR runs freight trains on tracks adjacent to Lafayette Street and to the Agnew Village. Freight operations occur outside the peak commuter rail periods. Approximately 10 to 12 freight cars pass through the City on a daily basis.





Parks, Recreation, and Open Space

Parks and open space are essential in any city, but become more important in growing communities as population density increases and development intensifies. Green spaces provide opportunities for relaxation and recreation, from organized sports to walking and bird watching. They also serve as important gathering places in a community, where people can casually meet. These activities need to be supported with an adequate supply of accessible and appropriately developed spaces that respond to the needs and desires of residents, daytime workers and visitors.

Santa Clara offers an incredible range of parks, recreation, and open spaces for users to enjoy. This chapter analyzes the City's existing supply and distribution of parks, recreation and open space facilities.

5.1 EXISTING FACILITIES

Since the last General Plan update in 1992, the City has added five municipal parks and several recreation facilities. The Santa Clara Parks and Recreation Department manages 49 municipal parks and special facilities (including a skate park, aquatic facilities, athletic fields, and the 185-acre Santa Clara Golf & Tennis Club). The Department runs activities for youth, teens, adults, and seniors through various community centers. In addition, the Department operates a 26.5-acre cemetery. In total, park and recreation facilities comprise nearly 543 acres within the City.

PARKS AND RECREATION FACILITIES

A combination of small and large parks are distributed throughout the City's residential neighborhoods, as shown on Figure 5-1 and described in Table 5-1. However, the industrial and business corridor between U.S. 101 and the railroad tracks contain limited open spaces. The City's parks and recreation facilities have been organized into categories to facilitate discussion and analysis of use and distribution.

Mini-Parks

Although most of Santa Clara's parks are larger than one acre, the City does contain a few mini-parks, defined here as parks no more than one acre in size. These parks typically have small service areas, and are dedicated to smaller-scale, more specific activities. For example, Rotary Park, located behind the Triton Art Museum, offers a playground, picnic tables and sitting area for families and adults. Other small parks, such as the Geof Goodfellow Sesquicentennial Park commemorate historical events while providing a small pocket of relaxation within the City. Overall, the 1.1 acres of mini-parks comprise only a minor proportion, or less than one percent, of the City's park space. However, as new development

occurs on smaller, confined parcels, mini-parks may be a growing typology for new open space within the City.

Neighborhood Parks

Community parks draw visitors from a larger radius, and perhaps the entire City, due to their larger size—over four acres—or unique recreation amenity. Central Park is one of the highlights of the City's park system. This 52-acre park, on Kiely Boulevard north of Homestead Road, contains open green space, picnic areas, a playground, as well as recreation facilities—the George F. Haines International Swim Center, Santa Clara Tennis Center, playing fields, lawn bowling, and an exercise course. (The City's Main Library is also located within Central Park.) With 15 parks, totaling 183 acres, community parks comprise 34 percent of Santa Clara's total park offerings, and play a distinct role in defining the City's identity.

Community Parks

Community parks draw visitors from a larger radius, and perhaps the entire City, due to their larger size—over four acres—or unique recreation amenity. Central Park is one of the highlights of the City's park system. This 52-acre park, on Kiely Boulevard north of Homestead Road, contains open green space, picnic areas, a playground, as well as recreation facilities—the George F. Haines International Swim Center, Santa Clara Tennis Center, playing fields, lawn bowling, and an exercise course. (The City's Main Library is also located within Central Park.) With 15 parks, totaling 183 acres, community parks comprise 34 percent of Santa Clara's total park offerings, and play a distinct role in defining the City's identity.

Public Open Space

Several of the City's prominent civic buildings are located within parks, creating a distinct park type, focused on civic activities. For example, the Mission Branch Library is located within City Plaza Park. Likewise, the Agnews Historic Park, on the Sun Microsystem's Santa Clara campus, provides a peaceful open space, but also contains four historic buildings, preserved through a historic easement. With just a few parks classified as public open space, these parks make up only five percent of the City's total park acreage.

Recreation Facilities

The City boasts an extensive array of recreation facilities, including sports fields, a skate park, pools, senior center, youth center and two golf courses. Many of these facilities are located within larger park sites, creating a variety of open spaces within a single location (host parks are shown in parentheses within the table below). The Department of Parks and Recreation offers a variety of classes and programs at these sites. Recreation facilities run by private companies are also included on this list and in the parkland total; these include Pruneridge Golf Course and the BMX Track. In total, recreation facilities account for over half of the City's total park acreage.

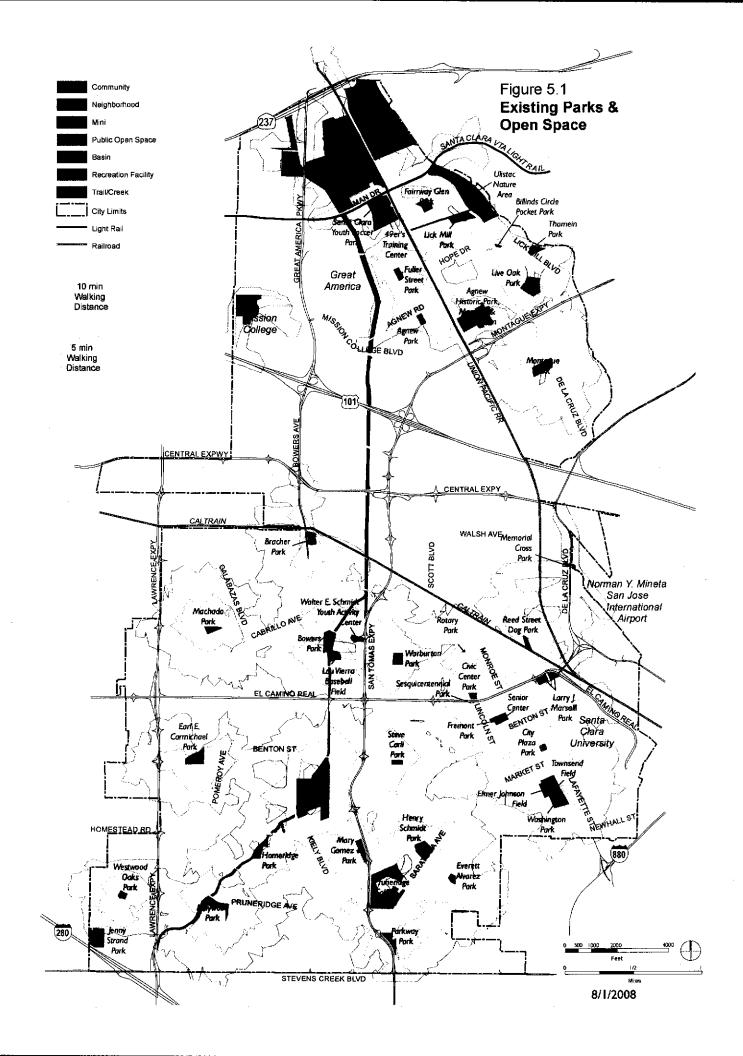
Not included in the table is the San Tomas Aquino/Saratoga Creek Trail, a paved multi-use pathway that runs along the City's creek and provides a recreation and alternative transportation option for pedestrians, cyclists and other users. In 2008, portions of the trail were still under construction. Once completed, the route will extend 12.5 miles, from the San Francisco Bay Trail north of SR 237 to Prospect Road in San José.

Table 5-1: Existing Parks and Recreation Facilities

Park or Recreation Facility Name	Total Acres	Picnic/ BBQ	Playing Fields	Tennis Courts	Pools	Play Areas	Basketball Courts	Indoor Activities
Mini-Parks	·	·						
Memorial Cross Park	0.4	X						
Billings Circle Pocket Park	0.5							
Rotary Park	0.2					Х		
Sesquicentennial Park	<0.1							
War Memorial Playground (Washington Park)		х				х		
Subtotal	1.1							
Neighborhood Parks				· · · · · · · · · · · · · · · · · · ·				1
Agnew Park	2.0	Х				Х	Х	
Bracher Park	3.5	Х			1	×	×	
Everett Alvarez Park	1.7	Х			1	X	×	
Fairway Glen Park	4.1	Х		×	1	X.		
Fremont Park	1.9					Х		
Fuller Street Park	2.4	Х				X		
Homeridge Park	3.3	Х				Х	Х	
Machado Park	2.6	Х				Х	Х	
Parkway Park	4.1	Х				X		
Reed Street Dog Park	1.7						-	
Steve Carli Park	1.6					Х	Х	
Thamien Park	3.2	Х		×		X	X	
Westwood Oaks Park	1.7	Х			1	Х	Х	Х
Subtotal	33.9							
Community Parks							<u> </u>	
Bowers Park	7.4	Х				Х		
Central Park	44.0	Х	×			12.	Х	
Earl R. Carmichael Park	7.3	Х		×		Х	Х	
Henry Schmidt Park	7.7	Х	Х	×		Х	Х	
Jenny Strand Park	9.7	Х		×		Х	Х	
Larry J. Marsalli Park	4.5		Х			Х		
Lick Mill Park	9.7	Х		×		Х	Х	
Live Oak Park	10.2	Х				Х		
Mary Gomez Park	4.7				Х	Х	X	
Maywood Park	7.3	Х		×		Х		
Montague Park	7.2	Х		Х	×	×	Х	

Park or Recreation Facility Name	Total Acres	Picnic/ BBQ	Playing Fields	Tennis Courts	Pools	Play Areas	Basketball Courts	Indoor Activities
Santa Clara Youth Soccer Park	11.2		×					
Ulistac Nature Area	40.8							
Warburton Park	4.1	Х			X	X	Х	
Washington Park	8.2		×					
Subtotal	183.8							
Public Open Space		·	J				<u> </u>	<u> </u>
Agnews Historic Park, Man- sion & Auditorium	21.3							×
City Plaza Park	1.6	Х			<u> </u>			Х
Civic Center Park	1.7							×
Subtotal	24.7							
Recreation Facility		<u> </u>	'					·
Community Recreation Center (Central Park)								×
Elmer Johnson Field	5.1		×					
George F. Haines International Swim Center (Central Park)					×			
Gymnastics Center (Earl R. Carmichael Park)								×
Lawn Bowling Green (Central Park)			X					
Lou Vierra Baseball Field	2.8		×					
Pruneridge Golf Course	31.3							
Mission College Sports Center	19.4		×					
Santa Clara Golf & Tennis Club	185.1							
Santa Clara P.A.L. BMX Track	45.7							
Senior Center	2.4				Х			Х
Skate Park	0.9							
Tennis Center (Central Park)				X				
Townsend Field	5.0		Х					
Walter E. Schmidt Youth Activity Center	1.5							
Subtotal	299.1				ļ · · · · · · · · · · · · · · · · · · ·	 		
TOTAL	542.7			,				

Source: City of Santa Clara, Dyett & Bhatia, 2008.









Santa Clara has made natural open spaces more accessible in recent years, improving trails along the City's creeks (left and center) and creating the Ulistac Nature Area, which contains over 40 acres of habitot area and walking trails.







Santa Clara takes pride in its recreation programs and park spaces. Central Park includes multiple recreation and sports activity centers, the Santa Clara Library, and other passive and active activity areas.

OTHER PARK AND RECREATION FACILITIES

Joint Use Facilities

The City's public parks and recreation system is augmented by the Santa Clara School District and other private facilities. The City has a cooperation agreement with the School District for the joint use of facilities, such as ball fields, basketball and volleyball courts, playgrounds, and gymnasiums. Facilities are available for City recreation programs and private groups when not in use by the School District. Likewise, the softball and baseball fields at Mission College may be used by City residents. Lastly, the City contains private facilities that are open to the public, including Great America, an amusement park.

Regional Facilities

The San Francisco Bay Trail is a nearly 290-mile regional trail system that encircles the Bay Area, providing access to the shoreline, connections to parks and neighborhoods, and links to non-motorized transportation options. Following the shoreline as closely as possible, the Bay Trail system consists of a main trail along with spurs and connectors to points of interest, activity and employment centers, as well as other trails. The Bay Trail runs along the north side of SR 237 and connects to Santa Clara via the San Tomas Aquino/Saratoga Creek Trail. Just to the east of the City, the Guadalupe River Park extends three miles from I-280 to the south, culminating in over 170 acres of parkland adjacent to I-880 and the Norman Y. Mineta International Airport. Bicycle and pedestrian trails extend approximately five miles north to the Don Edwards San Francisco Bay National Wildlife Refuge and the 177-acre Sunnyvale Baylands Park.

Located on the Bay, just to the north of Santa Clara, the San Francisco Bay National Wildlife Refuge provides a habitat and conservation area for wildlife, migratory birds, and threatened and endangered species. As of 2004, the Refuge spanned 30,000 acres of open bay, salt pond, salt marsh, mudflat, upland and vernal pool habitats located throughout south San Francisco Bay. The Refuge provides opportunities for wildlife-oriented recreation and nature study. There is an Environmental Education Center located in Alviso that provides programming for school and community groups.

5.2 STANDARDS

The supply, distribution, and quality of park programming are all essential components of a strong network of park and recreation facilities. Currently, the City does not regulate park provision within the City. While the existing General Plan includes an implementation policy to develop standards and criteria for park creation with new residential development (Policy 6.9.2-viii), the City typically negotiates park acreage as part of development agreements. This method allows flexibility for multiple factors including size of development, availability of land, expected density and land uses, and demographics. As a result, projects vary in terms of overall park provision.

OVERALL SUPPLY

Santa Clara currently has approximately 4.7 acres of overall parkland and recreation facilities for every 1,000 residents, but only about 2.4 acres of neighborhood parks for every 1,000 residents. Surrounding Santa Clara County cities—most which have established park standards as part of their general plans—typically have a range of three to five acres of neighborhood parks per 1,000 residents. For example, in 2006, Sunnyvale reported a ratio of 4.6 acres per 1,000 residents, excluding wetlands, orchards and other open spaces that do not allow for active use. In 2001, the City of Mountain View reported 3.6 acres per 1,000 residents, excluding the regional Shoreline Park.

DISTRIBUTION

Parks and recreation facilities are well distributed through the residential portions of the City. However, the central employment and industrial area, between U.S. 101 and the railroad tracks, do not have an abundance of park land. Figure 5-1 shows quarter- and half-mile radius walking distances from every City-owned or joint-use park and recreation facility.

As expected, the southern and northeast portions of the City have the best access to parks. The neighborhoods around Rivermark and other developments in the Agnews area contain new neighborhood parks, as well as some citywide and regional-serving open spaces, such as Ulistac Natural Area, Santa Clara Golf and Tennis Club, and the San Tomas Aquino Creek Trail. In the southern portion of the City, Central Park serves as the largest and most centrally-located park; however, it is complemented by several smaller parks around the Downtown and throughout the remainder of the City. In both areas, streets that do not connect through to the parks create

¹ Based on a 2008 population of 115,503 residents and all parks and open spaces from Table 5-1.

² City of Sunnyvale. "Open Space and Recreation Sub-Element." 2006: 2.

³ City of Mountain View. "Parks and Open Space Plan" Adopted 2001: 20.

boundaries to park access. Moreover, even streets that do connect can create perceived boundaries. For example, residents may be hesitant to cross a busy street or the railroad tracks to access a park. Additional discussion of park accessibility is included in Chapter 3: Community Design and Historic Preservation.

RECENT TRENDS AND IMPROVEMENTS

Although, the current General Plan does not include park acreage standards, park provision is discussed here in terms of acres per 1,000 residents. While any future standards will likely be confined to neighborhood parks, the discussion here is in terms of total park acreage for comparative purposes. In 1991, the City contained 27 parks, totaling about 340 acres. Given the population of 93,613 in 1990, this represents a ratio of 3.6 acres per 1,000 residents, substantially less than the ratio today, in 2008, of 4.7. Since 1991, the City has added over 20,000 residents and approximately 200 acres of park land. Most of the additional park land comes from new parks in the northern portion of the City, which also added residential development during this time period. These parks include Ulistac Natural Area, Agnew Historic Park, Youth Soccer Park, Live Oak Park, Thamien Park and the BMX Track, which together, total over 130 acres.

While several regional parks have added significantly to the City's parks-to-residents ratio, new and proposed developments include smaller internal open spaces. For example, the 17-acre Winchester (BAREC) approved development, with six acres of senior housing and 10 acres of single-family attached and detached housing, is proposing a new 1-acre park. The Rivermark development, with over 3,100 homes and residential units over roughly 150 acres, has a ratio of about two acres per 1,000 residents. During community workshops and interviews, residents and other stakeholders expressed concern that new residents are not provided with adequate open space within medium- and high-density housing developments.

According to the Association of Bay Area Governments (ABAG), Santa Clara's population is expected to increase to over 146,000 by the end of the next General Plan period in 2035. To maintain the current ratio of 4.7 acres per 1,000 residents for this projected population, the City would have to add another 144 acres of park land over the planning period, for a total of 686 acres.

¹ Dyett & Bhatia's park acreage calculations in GIS (data provided by Metroscan and City of Santa Clara) were not always consistent with the City's reported park totals provided by the Parks and Recreation Department. Therefore total park acreage change from 1991 to 2008, not only reflects actual increases in the number of parks and acres, but also accounts for some discrepancies in the reporting of park acreages.

SANTA CLARA GENERAL PLAN AND ZONING UPDATE







North of Highway 101, several new parks have been added to meet demand from new population growth. The Youth Soccer Park (left) and Thamien Park in Rivermark (center) complement existing parks in the area, such as Agenew Park (right).

5.3 DEFICIENCIES AND PLANNED IMPROVEMENTS

DEFICIENCIES

During stakeholder meetings and community workshops, employees of companies in the office and industrial portion of the City, between U.S. 101 and the railroad, expressed a desire for more small parks near employment centers, in order to provide open space during the day for employees to enjoy at lunch time or after work.

The western end of El Camino Real, within City boundaries, does not have good access to parks. With many residential or mixed-use development projects proposed in this area, it will be important to identify ways to provide open space for new residents. Community members and stakeholders praised the City's existing parks, but expressed desire for more large parks and generally more open space as population and residential densities increase.

PLANNED IMPROVEMENTS

Construction is underway on the third segment (Reach 3) of the San Tomas Aquino/Saratoga Creek Trail, from Scott Boulevard to Monroe Street. Like the other portions of the trail, this section will be asphalt paved, have signage and striping, directional and interpretive signs, retaining walls with art panels, drainage systems, fencing and railings. Once completed this trail will help to connect the northern and southern portions of the City and provide an alternative transportation network between activity and jobs centers, as well as parks and recreation facilities.

Additional pocket or mini-park spaces are identified in the Santa Clara Station Area Plan, which includes 5.5 acres of small parks located close to residential neighborhoods and activity centers in Santa Clara. Outside of large development projects with plans for internal common open spaces, no other parks are planned in the City at this time.



Public Facilities

The extent, capacity, and quality of public facilities that serve Santa Clara substantially affect the quality of life enjoyed by those who live, work, and own property in the City. These services are a major factor in determining the amount, location, and type of growth a community can anticipate. Santa Clara provides a high-level of education, community, civic, and public safety services for its residents.

6.1 SCHOOLS AND EDUCATION

This section identifies the existing educational infrastructure for Santa Clara residents of all ages. These services are provided primarily by public organizations, and include primary, secondary, and higher and continuing education. Information from this section was gathered from the School District, Santa Clara County, State, and direct communication with educational service providers.

Public School Districts

The Santa Clara Unified School District (SCUSD) is the primary school district serving students in Santa Clara. Within City boundaries, the District contains 13 elementary schools, two middle schools, one K-8 school, and four high schools. However, the District's boundaries extend beyond the City's; SCUSD also serves the eastern portion of Sunnyvale and northern portion of San José (Alviso). The District has four sites (three elementary and one middle school) outside City boundaries; some Santa Clara student-residents attend these schools.

In addition, the Cupertino Union School District serves the southwest corner of Santa Clara and has one elementary school within City limits and a second site currently leased to several small private schools and child care centers. The Fremont Union High School District also services this portion of the City, but does not have any school sites within City boundaries. The Campbell Union District and Campbell Union High School District serve the southeast portion of the City, but also do not have school sites within Santa Clara. This chapter only focuses on the student population and facilities in SCUSD. Therefore, this analysis does not capture the limited number of students who live in Santa Clara, but attend school in an adjacent City; however, it does include students who live in Sunnyvale and North San José, but attend school in SCUSD. School District boundaries and public schools within Santa Clara's boundaries are shown in Figure 6-1.

STUDENT POPULATION

As of December 2007, K-12 enrollment in SCUSD totaled approximately 14,400 students. Table 6-1 describes the demographic characteristics of the student population. About 28 percent of students are classified as English Language Learners (ELLs), similar to the proportion of ELLs in Santa Clara County and the State as a whole. Approximately 42 percent of students qualify for free and reduced priced meals, an indicator of the poverty rate. This

proportion is somewhat more than the Countywide rate of 34 percent, but less than the Statewide average of 50 percent. In terms of ethnicity, Hispanic and Caucasian students make up the bulk of the student population. The student population is similar to the overall City population, except that there is a higher proportion of Hispanic students (31 percent, compared to 18 percent Citywide) and a lower proportion of Caucasian students (29 percent, compared to 41 percent Citywide).

Table 6-1: District Enrollment by Ethnicity, 2006-2007 School Year

Ethnicity	Students	Percent
English Language Learners	4,004	28%
Free or Reduced Price Lunch	5,973	42%
Ethnicity		
African-American	722	5%
Asian	2,839	20%
Filipino	1,024	7%
Hispanic or Latino	4,382	31%
White (not Hispanic)	4,099	29%
Other ¹	1,085	8%
Total	14,151	100%

^{1.} Other includes Pacific Islander, multiple ethnicities, or no response.

Source: California Department of Education, Education Demographics Units, 2007

Student enrollment has been increasing over the past several years, after a period of declining enrollment. Enrollment peaked most recently during the 1998-1999 school year, with 14,645 students. The subsequent decline in the early 2000s was likely due to job loss during the dot-com collapse and escalating housing prices, both of which prompted families to move out of the City. Enrollment has been increasing since the 2002-2003 school year and is expected to continue to grow through the 2035 planning period.



Buchser Middle School is one of two middle schools in Santa Clara, and has an enrollment capacity of approximately 1,100 students.

Capacity

As of the 2007-2008 school year, the District has reported an excess capacity at the elementary and middle school levels, but its high schools are filled. Table 6-2 describes 2007-2008 enrollment and capacity at each school in the District. The elementary and middle schools are enrolled at 86 and 81 percent of capacity, respectively. There are over 1,100 available seats for students in grades K-5 and nearly 700 in grades 6-8. At the high school level, however, the two large high schools—Adrian Wilcox and Santa Clara High School—exceed capacity by 16 and 20 percent, respectively (roughly 300 students each). The smaller New Valley Continuation School is also over capacity by 20 students. In contrast, the other small high school, Wilson Alternative, is only at 85 percent capacity. This facility is targeted to students with particular education needs and is not appropriate for all students.

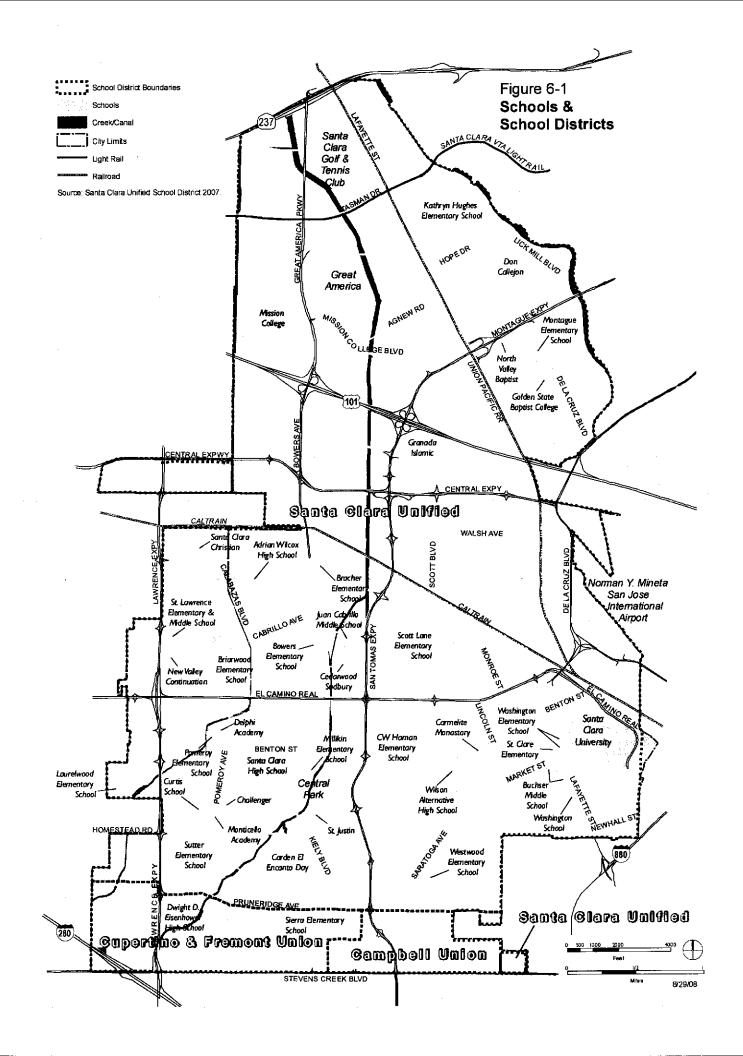


Table 6-2: Santa Clara Unified School District Schools: Current Enrollment and Capacity

School Name	Grade Level	Enrollment '07-'08	Enrollment Capacity	Percent Capacity
Bowers	K-5	416	499	83%
Bracher	K-5	368	454	81%
Briarwood	K-5	385	501	77%
C. W. Haman	K-5	369	478	77%
Kathryn Hughes	K-5	426	491	87%
Laurelwood	K-5	581	605	96%
Millikin	K-5	372	372	100%
Montague	K-5	284	454	63%
Pomeroy	K-5	538	537	100%
Scott Lane	K-5	450	469	96%
Sutter	K-5	370	432	86%
Washington	K-5	355	416	85%
Westwood	K-5	434	637	68%
Braly (Sunnyvale)	K-5	336	364	92%
Ponderosa (Sunnyvale)	K-5	504	537	94%
George Mayne (Alviso)	K-5	450	514	88%
Buchser	6-8	1,051	1,088	97%
Juan Cabrillo	6-8	937	948	99%
Peterson (Sunnyvale)	6-8	823	1,448	57%
Don Callejon	K-8	657	900	73%
Adrian Wilcox	9-12	1,886	1,624	116%
New Valley Continuation	10-12	181	160	113%
Santa Clara	9-12	1,827	1,524	120%
Wilson Alternative	9-12	399	470	85%
TOTAL ENROLLMENT		14,399	15,922	

Source: Santa Clara Unified School District

Facilities and Planned Improvements

As a result of the North San José Plan, which may add up to 32,000 new residential units near the Santa Clara border, SCUSD expects an increase in demand for K-5 and/or K-8 schools in the North San José area. In response, the District is projecting four new schools with the first to open in 2012 and the second to follow in 2013 or 2014. The District is also considering adding an additional small high school to serve this area. By 2020, the District projects that total student enrollment may be as high as 16,600 students.'

¹ Written correspondence from Business Department, Santa Clara Unified School District.

To meet its projected demand, the District has the ability to reopen schools that are currently closed or to install portable classrooms on existing school sites to accommodate any increase in enrollment. All of the closed sites are in or near the residential portion of Santa Clara, in the southern half of the City: two elementary schools and one middle school in Santa Clara and a middle school in Sunnyvale. In addition, the District renovated 15 of its 16 elementary schools in 2005, but did not increase school capacity at these sites. During the next five to seven years, the District is proposing to also renovate its middle and high schools.

PRIVATE K-12 SCHOOLS

In addition to its public schools, the City of Santa Clara contains 15 private and parochial schools. Currently, private schools serve nearly 3,000 students between pre-kindergarten and 12th grade, including students coming from outside the City. These schools are concentrated in the southern residential portion of the City.2

HIGHER EDUCATION

Santa Clara University

Santa Clara contains a rich set of colleges and universities. Founded in 1851, Santa Clara University (SCU) is the oldest operating institution of higher learning in California. Currently, SCU serves over 8,000 students and employs 1,500 faculty and staff members. SCU offers a four-year Bachelor's degree program and graduate degrees in law, business, engineering, counseling psychology, education, and pastoral ministries. Its campus lies on the southeast side of the City, adjacent to the Santa Clara Station Area, and includes 106 acres.3



Santa Clara University is a historic and cultural landmark within the City.

SCU is in the process of updating its Master Plan. The University is anticipating an increase in its student body and is looking to increase the number of students served by on-campus housing from 2,500 to 3,500.4

Mission College

Mission College is a public community college that serves over 9,000 full- and part-time students through day, evening and online courses. The College has 290 faculty and staff members. The College offers 114 academic, vocational, basic skills, and enrichment programs, in preparation for transfer to a four-year university or towards Associate's degrees or

¹ Written correspondence from Business Department, Santa Clara Unified School District.

² GreatSchools.net: http://www.greatschools.net

³ Santa Clara University. "About SCU: At a Glance." < http://www.scu.edu/about/at_a_glance.cfm>

⁴ Communication with Santa Clara University Operations personnel.

certifications. It is situated just north of U.S. 101 and west of the Great America Parkway on a 164-acre campus.1

Based on expected increases in student enrollment and anticipated technology and flexibility needs, the College has recently initiated a facilities master planning project to redevelop parts of its campus over the next 25 years. The Draft Master Plan calls for demolition of the Main Building, at the center of campus, and its replacement with several smaller buildings. In addition, the Plan proposes redevelopment of the Mission Transportation buildings, new athletic facilities, added landscaping and sustainability measures, and parking to accommodate projected growth.2



Mission College plays an important role within the community, offering public education and recreation opportunities within the City.

Golden State Baptist College

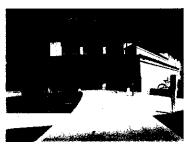
Golden State Baptist College is an independent unaccredited fundamental bible college, part of the ministry of North Valley Baptist Church of Santa Clara. The College houses over 400 students in on-campus dormitories, and includes additional faculty and staff.

LIBRARIES 6.2

Currently, Santa Clara has two libraries. The Santa Clara Central Library (also known as the Central Park Library), is located on Homestead Road in Central Park, as shown in Figure 6-2. The Mission Branch Library is located on Lexington and Main streets. A second branch, the Northside Branch Library, is planned in Rivermark to serve residences on the north side of Santa Clara.

In addition to books and resources, the libraries provide community and group study rooms, computers with internet access, children and adult classes, book clubs, and a café. The libraries report 1,293,827 visitors per year and 2,657,430 borrowed items per year (nearly 24 items per capita). Compared with other libraries in the same population group (100,000 - 150,000) in the State, the Santa Clara Central Library is first in circulation and attendance.3

The 80,000-square foot Central Park Library, now almost four years old, has been a popular addition to the community, with over 3,000 people per day using the



The new Central Library is located within Central Park, and has over one million visitors a year.

¹ Mission College. "Institutional Self Study Report in Support of Reaffirmation of Accreditation" Submitted November 15, 2007. Introduction: 6.

² Mission College. "Mission College Campus Master Plan." Draft January 28, 2008.

³ Written correspondence from City Librarian, Santa Clara City Library; California State Library Statistics 2007

library. The library shares parking with the International Swim Center and Central Park; during events in these venues, it can be difficult for library patrons to find parking.

The Northside Branch Library is scheduled to begin the design phase in 2010 and be completed in 2012.² Land has been set aside for this purpose in the Rivermark area, at the edge of Live Oak Park.

6.3 SAFETY SERVICES

POLICE

The Police Department has not increased its staffing significantly over the past several years. In fact, the Department has about the same number of officers as in the 1980s. Currently, the Department has 147 sworn police officers, 80 professional staff, 34 crossing guards, and over 40 other reserve and volunteer staff. Police Department headquarters are located on El Camino Real, near the Santa Clara Caltrain Station. A substation in Rivermark serves the north side of the City (see Figure 6-2). The Department also operates the Firearms Training Center, Tech Service Center, and 911 Dispatch; the latter will be incorporated into the Police headquarters building, with construction set to begin in 2008.



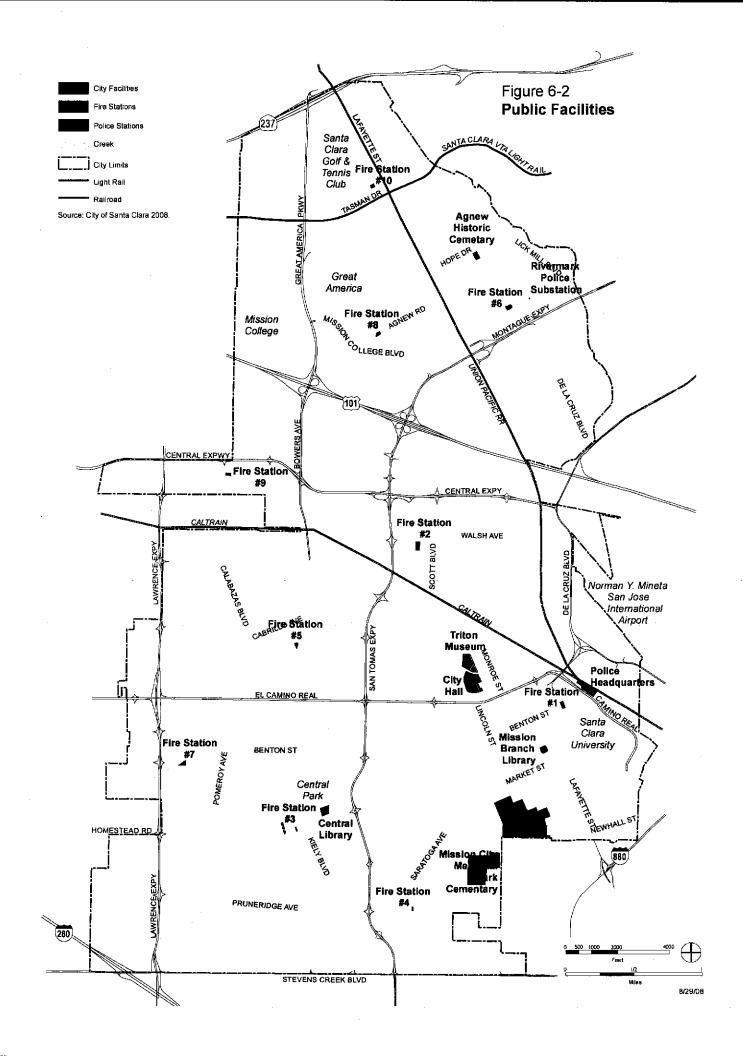
The Santa Clara Police headquarters is located off of El Camino Real at Benton Street, adjacent to the Santa Clara Transit Center.

The City's current ratio is about 1.2 officers per 1,000 residents, similar to the Countywide average. In Fiscal Year 2007, the average response time was 3:55 minutes. The Department's target performance measure is three minutes or less for high priority calls. In 2006, dispatchers fielded over 80,000 calls and officers responded to over 57,000 calls for service.³

¹ Written correspondence from City Librarian, Santa Clara City Library.

² Written correspondence from City Librarian, Santa Clara City Library; 2008-09 Capital Improvement Project budget

³ Santa Clara Police Department. 2006 Annual Report. Page 2, 13.



Fire

The Fire Department has 179.5 paid personnel and 65 reserve employees (including full- and part-time employees). There are ten fire stations, dispersed throughout the City, as shown in Figure 6-2, and at least one three-person engine or ladder truck company at each station. No additional facilities are planned at this time. Paramedic services are housed in three of the stations. The Department anticipates that the City's senior citizen population may increase and place additional demands on Emergency Medical Services (EMS).



Santa Clara Fire Station No. 1 was the first fire station built in the City.

In 2006, average response time ranged from three to five minutes. The Department's goal is to continue to meet this target. The Insurance Advisory Organization (ISO) rates fire departments based on their communication systems, water supply and equipment, in addition to the compliance of the City's buildings to the Uniform Building Code. The efficiency of the current Department is reflected in its ISO rating of Class 2, a good rating that means fire insurance rates can remain low.

OTHER CIVIC FACILITIES

There are several other facilities that contribute to the vibrancy of the City, including arts, culture and community facilities.

MUSEUMS

The Triton Museum of Art, located across from City Hall, is dedicated to exhibiting art from the greater Bay Area community. Funded by grants from the City and private foundations, the museum offers free admissions to exhibitions, classes for children and adults, and special events for the community.

The South Bay Historic Railroad Society operates a museum and research archive at the historic Santa Clara Depot, located at the existing Santa Clara Caltrain Station. The Depot The Santa Clara Historic Depot is both a contains operational model trains depicting western railroad prototypes and a museum containing railroad artifacts and memorabilia.



historic site as well as a museum facility.

The City owns several other historic properties which are operated by non-profit organizations and open to the public. The Harris-Lass Preserve on Market Street is a living history museum representative of the area's agricultural past. A group of volunteers offer tours to visitors, including local students who visit the museum as part of their studies of local history. The Headen-Inman and Jamison-Brown Houses on Warburton Avenue are historic homes now operating as museums, displaying photographs and artifacts of early pioneer days in Santa Clara and exhibits organized by the Santa Clara Art Association. The Berryessa Adobe on Jefferson Street is an old adobe structure, home to early Spanish and Mexican settlers. As one of the last remaining adobe homes in the area, it is an interpretive site on the Juan Bautista de Anza National Historic Trail.

ARTS AND CULTURE FACILITIES

SCU has arts facilities which are open to the public at large. The Mayer Theater has two theaters and a recital hall to house student and visiting productions. SCU also operates the de Saisset Museum, an art and history museum with free admission for all visitors.

Through a joint agreement, the City of Santa Clara and the Santa Clara Unified School District built the Mission City Center for Performing Arts in 2004. The Center, located adjacent to Wilcox High School, includes two facilities: a 360-seat main theater and a smaller flexible theater space. The Wilcox Stage Company, Santa Clara Ballet, and Mission City Opera all perform here.

The City's Community Recreation Center, located in Central Park, includes a multi-purpose room with a stage and specialized instruction spaces for classes, including theater, visual arts, dance and fitness. Youth and adult theater groups stage plays and events in the Community Recreation Center.

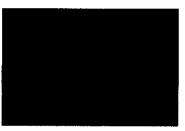
CONVENTION CENTER

The City's Convention Center provides 242,000 square feet of meeting, trade and convention space, adjacent to hotel, golf and tennis facilities. The Convention Center includes a 607-seat theater, used part of the year by the Santa Clara Ballet. In October 2007, construction began on an extension which will add 24,000 square feet of multi-purpose space to the Convention Center.

PUBLIC AND SOCIAL SERVICES

Social services are available in the City through non-profit providers and public facilities. The Bill Wilson Youth Emergency Center and Homesafe Family Shelter are both located just outside of Santa Clara's Downtown, along The Alameda, at Harrison Street and El Camino Real, respectively. These facilities offer shelter for youth, women, and children, and are clustered in proximity to the recently-built Santa Clara Police Station at El Camino Real and Benton Street. Within Fremont Park, the Santa Clara Senior Center offers recreational and educational activities to community members aged 50 years and older. The largest senior center in the Bay Area, the 45,000 square-foot facility just finished a major expansion in early 2007.







The Santa Clara Convention Center is located adjacent to Great America, and boasts both conference and performance facilities (left). Santa Clara is also home to non-profit facilities like the Bill Wilson Youth Emergency Center and Homesafe Family Shelter, which focus on providing services to Santa Clara residents in need (center and right).

Environmental Resources

This chapter describes the City's environmental resources and their implications for the planning process. It includes information on the following topics:

- Geology, soils, and seismicity;
- Hydrology and water resources;
- Biological resources;
- Mineral and energy resources, and energy consumption; and
- Hazardous materials and related issues.

Each section includes an overview of State, federal and local policies and regulations that are relevant to each environmental topic. Existing conditions in the City are described, along with any known constraints.

7.1 GEOLOGY, SOILS, AND SEISMICITY

This section addresses geology, soils, and geologic hazards in the City of Santa Clara, as they relate to the proposed General Plan Update. It includes a description of the City's topography, geology, and soils; summarizes geologic and soils-related hazards and constraints in the City and vicinity; and presents key geologic issues and implications for the City to consider, including planning constraints and land use opportunities due to regulatory requirements and existing conditions for geology and geohazards. Mineral resources are discussed separately in Section 7.4 below.

REGULATORY ENVIRONMENT

Geologic issues and practice are regulated primarily at the State and local level, with substantial implementation authority delegated to local jurisdictions. The most important State regulations pertaining to geologic aspects of the planning process are the Alquist-Priolo Earthquake Fault Zoning Act and the Seismic Hazards Mapping Act.

In addition, Section 402[p] of the federal Clean Water Act, as amended, establishes requirements for management and discharge of stormwater runoff from construction sites larger than one acre (smaller sites are regulated if they are related under a common plan of development). These requirements are relevant to geology and soils through their impact on construction site housekeeping.

Besides the requirements and guidance in applicable State and federal regulations, the City has adopted and requires compliance with the 2006 International Building Code, with certain exceptions that are not relevant to geology, soils, or engineering geologic/geotechnical practice (Santa Clara Municipal Code Sec. 15.15.010). The City has adopted Appendix Chapter J, which regulates grading practices.

EXISTING CONDITIONS

Topography and Geology

Regional Physiographic Setting and Geology

Located in the heart of the Santa Clara Valley, the City lies near the southern end of a regionally extensive topographic low that includes San Francisco Bay as well as the Petaluma, Sonoma, and Napa Valley to the north (Norris and Webb 1990).

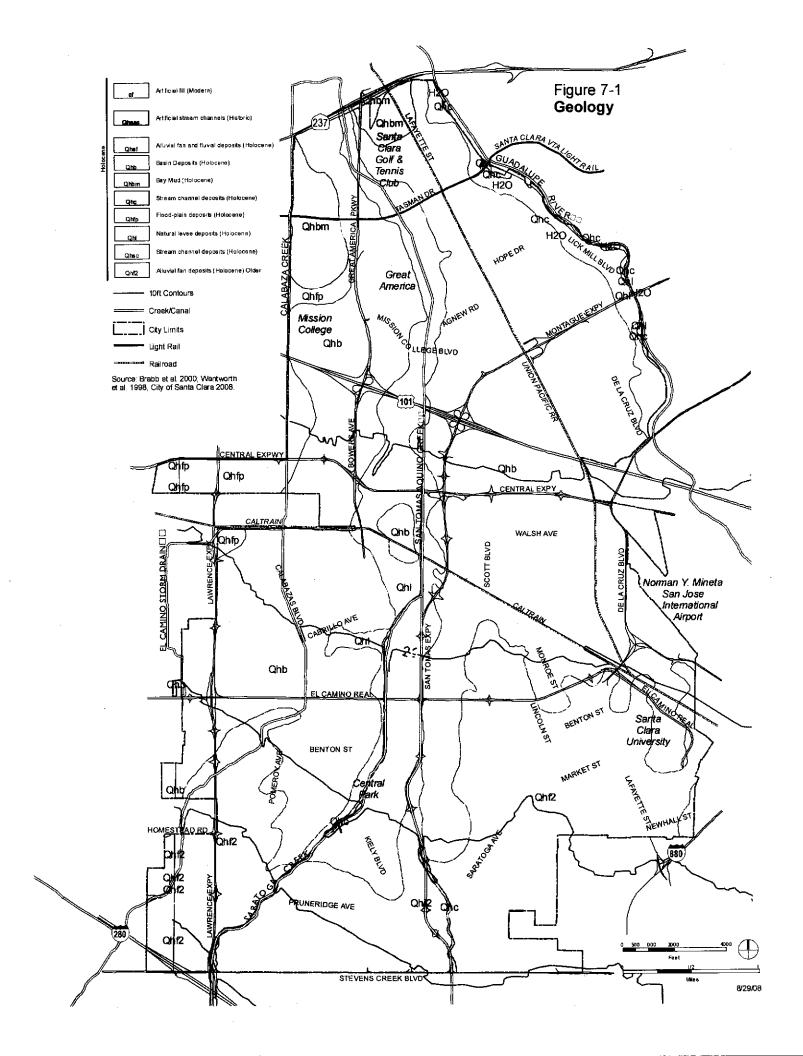
The Santa Clara Valley is bounded by the Santa Cruz Mountains on the west and the Diablo Range on the east. Topography in and around the Valley is largely controlled by active faulting. Key structures on the Valley's east margin include the Hayward, Calaveras, and allied faults. The Valley's west margin is formed along a complex zone of reverse and dextral faults including the Monte Vista, Berrocal, Shannon, and Sargent—that are often referred to collectively as the "range-front fault system." Farther west is the San Andreas fault zone (Stanley et al. 2002).

Bedrock exposed in the Santa Cruz Mountains west and south of the City includes Mesozoic Franciscan Complex sandstone and marine sedimentary rocks of Miocene age; the Santa Cruz Mountains uplift is fringed along the valley margin by an apron of Pliocene and Quaternary alluvium. To the east of the Valley, the core of the Diablo Range uplift consists of Franciscan Complex rocks (sandstone, chert, and ultramafic rocks), overlain by and faulted against Miocene marine and terrestrial sedimentary rocks. Like the Santa Cruz Mountains, the Diablo Range is bordered by an extensive apron of Plio-Pleistocene and younger alluvium. To the south, low hills situated where the Santa Clara Valley narrows along U.S. 101 are primarily composed of Franciscan chert, ultramafic rocks, and sandstone (Wagner et al. 1990).

Topography and Geology of the City

Most of the City occupies gently sloping valley floor topography in the north-central portion of the Santa Clara Valley. The City's northern edge includes a portion of the low-lying "Baylands" along the margin of San Francisco Bay.

Figure 7-1 shows the geology of the City. The southern portion of the City is situated on alluvial fan deposits of Holocene age (Wentworth et al. 1999, Brabb et al. 2000). These consist of varying proportions of gravel, sand, and finer sediments deposited in channels on the upper portion of alluvial fans. To the north, gravelly and sandy alluvial fan deposits give way to finergrained deposits recording overbank deposition in a "flood basin" or distal floodplain environment (Wentworth et al. 1999, Brabb et al. 2000, Stanley et al. 2002). Along the City's major streams (Saratoga and San Tomas Aquino Creeks) are natural levee deposits consisting of silt and clay, also of Holocene age (Wentworth et al. 1999). In addition, the City's larger streams convey gravel, sand, and silt undergoing active transport via the yearly flood cycle.



Soils

Figure 7-2 is a generalized soils map for the City and vicinity, based on mapping by the U.S. Department of Agriculture's Natural Resources Conservation Service (formerly the U.S. Soil Conservation Service).

As shown in Figure 7-2, the south half of the City is situated primarily on soils assigned to the Yolo series, with soils of the Zamora-Pleasanton association present along the City's southwesternmost edge. All of these soil units consist of well-drained loamy soils formed on alluvial sediments. The Yolo series comprises of loams, silt loams, and silty clay loams formed in nearly level to moderately sloping alluvial plain and alluvial fan settings. The Zamora series is similar---well drained loamy soils formed on nearly level to moderately sloping alluvial fan surfaces—but these soils formed in a slightly higher position on the alluvial fan system and thus are more texturally varied. They include loam and clay loam at the surface and in the very shallow subsurface, overlying gravelly sandy clay loam and fine sandy clay loam present at depth. The Pleasanton series formed on gravelly alluvium on moderately steep alluvial fan and terrace surfaces, and consists of loam, gravelly loam, and sandy clay loam (U.S. Soil Conservation Service 1968).

The north half of the City is situated primarily on soils of the Sunnyvale-Clear Lake-Castro association. In addition, a "finger" of soils assigned to the Orestimba-Willows association is present west of the Guadalupe River in the northeastern portion of the City, and a small area along the City's northwest limit is situated on soils of the Alviso association. All of these soils are poorly drained and formed in the fine-textured alluvium of low-lying alluvial plain and valley floor areas. The Sunnyvale series consist of calcareous silty clay. The Castro series consists of calcareous clay overlying a calcareous clay subsoil, and the Clear Lake series consists of clay and calcareous clay overlying a substratum of clay alluvium. The Orestimba series consists of clay loam and silty clay loam, the Willows series consists of clay, and the Alviso series consists of clay and silty clay. Orestimba, Willows, and Alviso soils are typically saline, and Alviso soils may also be alkaline. Permeability is generally very slow in soils of the northern City (U.S. Soil Conservation Service 1968).

Permeability (infiltration rate) ranges from slow in the upper floodplain and terrace areas along the south edge of the City to moderate in the much of the southern and central City, and very slow in the fine-textured soils alluvial plain/valley floor soils of the northern City. Expansion (shrink-swell) potential is generally moderate in the southern City's alluvial fan and plain soils and high in the alluvial plain/valley floor soils of the northern City. Soil erosion hazard is low throughout the City (U.S. Soil Conservation Service 1968). Bay margin soils at the City's northernmost edge are identified as compressible by the County of Santa Clara (2002a) (Figure 7-3).

Geologic Hazards

The State of California recognizes two broad categories of hazards associated with earthquake events. Primary seismic hazards include surface fault rupture and groundshaking. Secondary seismic hazards include corollary results of groundshaking, such as seismically induced landslides and various types of ground failure, including liquefaction. Based on current understanding of the City's geologic framework, the principal geologic hazards affecting the City are earthquake groundshaking and seismically induced liquefaction. The following sections provide additional detail.

Surface Fault Rupture and Groundshaking

As of the date of preparation of this report, the City does not contain any faults zoned under the Alquist-Priolo Earthquake Fault Zoning Act (Hart and Bryant 2007, County of Santa Clara 2002b). The risk of surface fault rupture—and the importance of surface fault rupture as a planning constraint—in the City is considered low at this time.

However, several active faults are present in the surrounding region, as summarized in Table 7-1. As a result the City is expected to continue to experience earthquake-related groundshaking.

Table 7-1: Maximum Credible Earthquake and Recurrence Interval for Major Faults in the Vicinity of the City

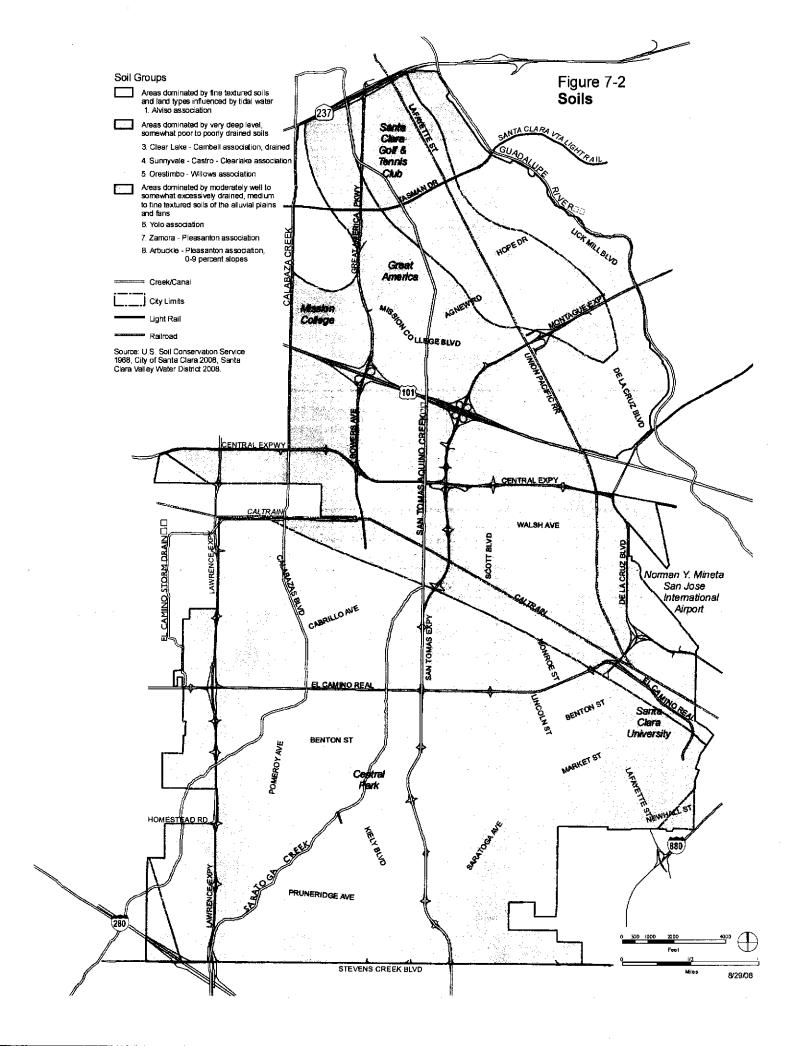
Fault	Zoned by State of CA? °	CBC Seismic Source Type'	Moment Magnitude of Maximum Credible Earthquake	Approximate Recurrence Interval ³
San Andreas	Yes	Α	7.0-7.9 ^b	210-400 ^b
Monte Vista- Shannon	No (but is zoned by County of Santa Clara)	В	6.5	Unknown
Hayward	Yes	Α	Entire fault: 7.1°	Entire fault: 330 years
-			Southern segment: 6.5 ^a -6.9 ^c	Southern segment: 161c-167b years
Calaveras (southern)	Yes	В	6.2°	75 years ^c

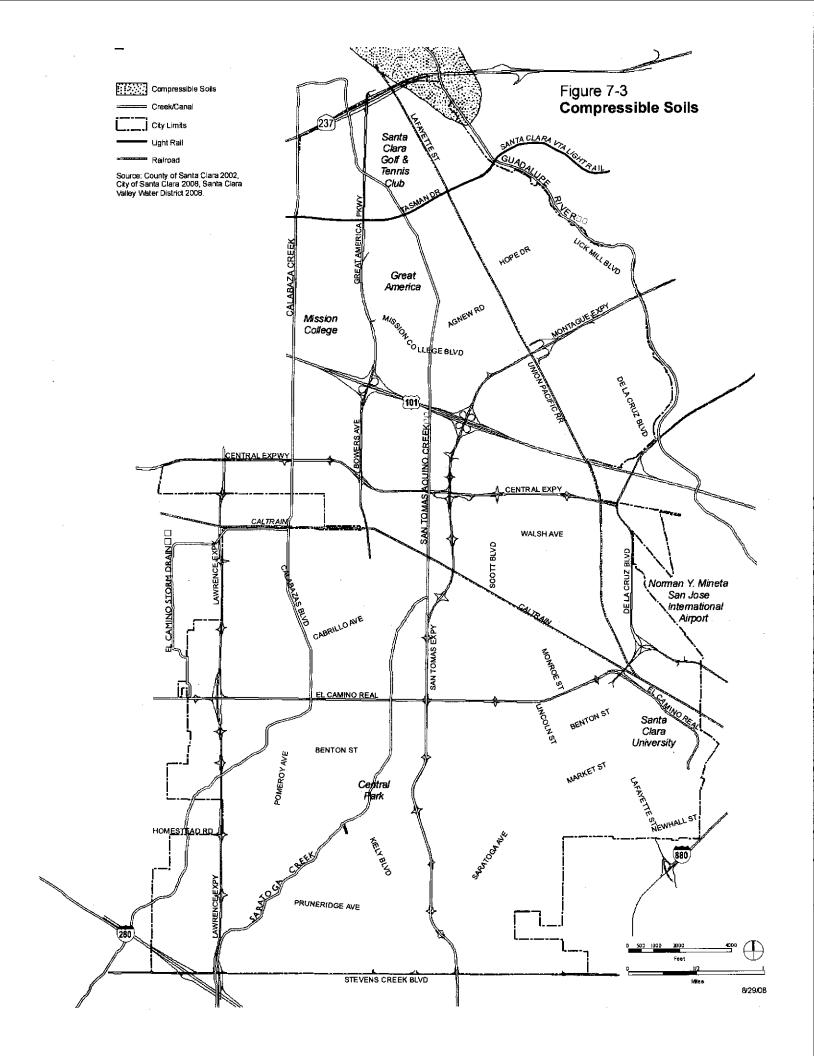
^{1.} The Uniform, California, and International Building Codes evaluate the risk associated with active faults based on their potential to generate large earthquakes (measured as the moment magnitude for the largest earthquake anticipated on the fault) and their degree of seismic activity (measured as average annual slip rate). Under this system, a Type A seismic source is a fault that is capable of producing large-magnitude events (> M 7.0) and is highly active (has a high average annual slip rate). A Type B seismic source is associated with smaller maximum event and/or is less active, but still constitutes a substantial seismic threat (International Conference of Building Officials

Sources: a) Hart and Bryant 2007, b) International Conference of Building Officials 1997, c) U.S. Geological Survey Working Group on California Earthquake Probabilities 2003.

The intensity of groundshaking in a given earthquake is a function of earthquake magnitude, the distance to the epicenter, and the response of substrate materials. As a rule, the greater the event's magnitude is, and the closer its epicenter is to a site, the higher the intensity of ground shaking that can be expected at the site.

The City is located in a region characterized by a moderate to high groundshaking hazard. Based on modeling by the California Geological Survey, predicted peak horizontal ground acceleration values in the City and surrounding area are on the order of 0.4-0.5g, where g represents the value of gravitational acceleration (9.8 meters/second²) (California Geological Survey 2002; see also Cao et al. 2003). For comparison, elsewhere in the San Francisco Bay Area and in parts of southern California, peak horizontal ground accelerations are projected as high as 0.8g, translating to much higher groundshaking risks, while the peak horizontal ground





acceleration projected for much of the Central Valley is much lower, at 0.1–0.2g.¹ Thus, although seismic groundshaking risks are substantially higher in some areas, a moderate to major event on any of several major Bay Area faults could result in potentially damaging groundshaking in the City.

Liquefaction and Other Types of Seismically Induced Ground Failure

As shown in Figure 7-3, the City is almost entirely within the zone of liquefaction hazard identified by the County of Santa Clara (2006a). Ground failure caused by liquefaction is thus a substantial concern for much of the City's development. Based on County hazards mapping (County of Santa Clara 2006a), the City's southern edge, approaching Stevens Creek Boulevard and I-280, is likely at less risk of liquefaction.

Slope Failure Hazards, Including Seismically Induced Landslides

Because the City is located on gently sloping and nearly flat valley floor topography, it is not subject to risk of landslides; landslide hazard mapping compiled by the County of Santa Clara (2006b) shows the City and other valley floor communities as outside the zone of landslide risk. Because the City is located at some distance from the rangefront, it is also highly unlikely to be at risk from landslide runout.

Land Subsidence

Portions of the central and northern Santa Clara Valley have experienced as much as 13 feet of nonrecoverable land subsidence as a result of groundwater overdraft in past years. Current water management practices have reduced rates of subsidence to less than 0.01 feet per year (Santa Clara Valley Water District 2001).

IMPLICATIONS FOR LAND USE

This section discusses the land use implications of the City's geologic setting.

Geology affects land use planning in two basic ways—directly, through the geologic conditions, including hazards, present in the planning area; and indirectly, through local jurisdiction responsibilities under the regulations and standards enacted to mitigate geologic hazards and regulate geologic practice in California. The direct (hazards-based) and indirect (regulatory) effects are closely related, because the principal State laws intended to manage geologic hazards—the Alquist-Priolo Act and Seismic Hazards Mapping Act—identify specific "trigger" geologic conditions that invoke protective or restrictive action on the part of local jurisdictions. Accordingly, this section is organized by regulation.

The principal geologic and soils-related constraints affecting the City are:

- seismic hazards (strong groundshaking, liquefaction),
- expansive soils, and

¹ Consistent with guidance in CGS's Recommended Criteria for Delineating Seismic Hazard Zones in California (California Geological Survey 2004), these figures are based on probabilistic modeling; thus, rather than absolute maxima, they represent the peak horizontal ground acceleration with a 10% probability of exceedance in 50 years.

compressible soils.

The City has regulatory responsibilities under the following laws and codes:

- Seismic Hazards Mapping Act.
- State regulations for seismic safety of "critical facilities" (schools, hospital, fire/police facilities).
- City-adopted building code.

Technically, the City also has responsibilities under the Alquist-Priolo Earthquake Fault Zoning Act. To date these have not come into play, because the City does not encompass the surface trace of any fault(s) that are, or have been, recognized as active by the State of California. However, this may change in the future; consequently, the Alquist-Priolo Act is also included in the discussion below.

ALQUIST-PRIOLO ACT, SEISMIC HAZARDS MAPPING ACT, AND OTHER STATE SEISMIC SAFETY REQUIREMENTS

As discussed above, the Alquist-Priolo and Seismic Hazards Mapping Acts regulate construction of structures for human occupancy along known active faults, and in zones of secondary seismic hazard, respectively. Although the Alquist-Priolo Act charges the State of California (the State Geologist, through the California Geological Survey) with identifying active faults and delineating active Earthquake Fault Zones within which construction should be regulated, the actual responsibility for implementing the Act's limitations rests with local jurisdictions. The Seismic Hazards Mapping Act establishes a similar division of responsibility to address secondary seismic hazards. Local jurisdiction responsibilities are summarized in Table 7-2; the permit review process is the tool typically used to enforce the requirements of both Acts.

Under both the Alquist-Priolo Act and Seismic Hazards Mapping Act, a local jurisdiction may exceed the State-required level of stringency. That is, local jurisdictions have the right to impose stricter criteria for approval of projects in State-designated Earthquake Fault Zones and/or Seismic Hazard Zones, to require geologic reports and/or setbacks for additional faults not zoned by the State, or to expand areas of identified liquefaction or landslide hazard. A number of California jurisdictions have elected to do so-for instance, the County of Santa Clara zones a number of faults (including those of the rangefront fault system at the west edge of the Valley) not recognized as active by the State of California (compare County of Santa Clara 2002b with Hart and Bryant 2007), and the Cities of Santa Barbara and Goleta both enforce the provisions of the Alquist Priolo-Act for potentially active (Pleistocene) as well as inactive faults.

Table 7-2: Requirements for Lead Agencies under the Alquist-Priolo Act and Seismic **Hazards Mapping Act**

Alquist-Priolo Act

- No structure for human occupancy that qualifies as a project as defined by the Act is permitted on the trace of an active fault.
- Unless proven otherwise by appropriate geologic studies, the area within 50 feet of an active fault is presumed to be underlain by active branches of the fault; note that this defines a corridor that totals 100 feet in width.
- Buildings converted to structures for human occupancy must comply with provisions of the
- A geologic report that evaluates the potential for surface fault rupture is required for any undertaking that qualifies as a project as defined by the Act. Reports must be prepared and stamped by a state-registered professional geologist (PG). The lead agency is responsible for having reports independently peer reviewed for adequacy by a PG.
- Final geologic reports ("fault evaluation reports") must be submitted to the State Geologist so they can be open-filed.

Seismic Hazards Mapping Act

- "Take into account" the information in "available seismic hazard maps" in developing General Plan safety element and in adopting or revising land use planning and permitting ordinance s (Public Resources Code Sec. 2699).
- A geotechnical report addressing risks and proposing appropriate mitigation is required for any project within a mapped Seismic Hazard Zone. Definition of project is the same as that used in the Alquist-Priolo Act. Geotechnical reports must be prepared by a registered civil engineer (PE) or certified engineering geologist (CEG) with competence in the field of seismic hazard evaluation and mitigation
- Lead agency must have the report independently reviewed to assess its adequacy and that of any mitigation measures it proposes. Reviews are must be conducted by a CEG or PE (civil).
- One copy of the approved geotechnical report, inclusive of any mitigation measures, must be submitted to the state Geologist within 30 days of report approval.
- Lead agency may determine that no mitigation for seismic hazards is required. This requires a report discussing geologically and geotechnically similar sites in the project vicinity, prepared and reviewed by a PE/CEG competent in seismic hazards evaluation and mitigation. If a waiver is granted, the lead agency must provide the State Geologist with a written explanation of the reasons for the waiver, within 30 days of issuance.

Source: Hart and Bryant 2007, California Geological Survey 2008

Building Code Requirements

As discussed above, the City has adopted the International Building Code. Under the Code, City building officials have extensive review and oversight responsibility relative to all aspects of plan development, site preparation, earthwork, construction, and site finishing. The aim of the Building Code is to establish minimum standards for safe construction and good construction practice; the updated General Plan should reflect the City's stewardship role for project planning and construction oversight.

The Building Code includes provisions to address appropriate design and construction in seismically active areas. It also includes provisions to ensure that foundation and building design is appropriate to site soil conditions, including standards to address expansive soils conditions. To facilitate permitting and code enforcement, the City may wish to map and database areas with expansive and compressible soils, or to use the existing County soil hazards mapping, and identify appropriate policy guidance in the updated General Plan. For areas with highly expansive soils or compressible soils, additional oversight during building design and construction may be warranted, to ensure that building code standards are met or exceeded.

Along a related line, because the SWPPP requirement established in Section 402 of the Clean Water Act is administered through the Regional Water Quality Board with jurisdiction, the City has no specific responsibility or authority. However, the City may wish to consider including policies that support water quality protection through the implementation of construction site erosion and sediment control measures in the updated General Plan.

Public Outreach

Public awareness is an essential component of effective geohazards management. With this in mind, the City may wish to include policies in the updated General Plan that address the importance of public outreach and education in the following areas:

- Seismic hazards and earthquake preparedness.
- Building codes and the building permit process.
- Soil resources in the City.
- Erosion hazards and erosion control approaches for construction sites, businesses, and residences.

The City planning process and how it works to avoid and mitigate geohazards.

7.2 HYDROLOGY AND WATER RESOURCES

This section describes hydrology and water resources issues as they relate to the proposed General Plan Update. It provides an overview of existing surface and groundwater resources; water supply; and drainage and flood control infrastructure in the City. This section culminates with a discussion of the planning issues and implications related to long-term management and protection of the City's water resources.

REGULATORY ENVIRONMENT

Multiple federal, State, and local regulations and plans pertain to water resources and water resources planning in the City. The Clean Water Act (CWA) is the primary federal law protecting the quality of the nation's surface waters, including lakes, streams, and coastal wetlands. It operates on the premise that all discharges of pollutants into the nation's waters are unlawful unless specifically authorized by a permit; permit review is the CWA's primary regulatory tool. The CWA regulates construction-related stormwater discharges to surface waters through the National Pollutant Discharge Elimination System (NPDES) program. The NPDES program is officially administered by the U.S. Environmental Protection Agency (EPA). However, in California, the EPA has delegated its authority to the State Water

Resources Control Board; the SWRCB in turn delegates implementation responsibility to the nine Regional Water Quality Control Boards (RWQCBs). Santa Clara is under the jurisdiction of the San Francisco Bay Regional Water Quality Control Board.

The Safe Drinking Water Act is the primary federal law protecting the quality of the nation's drinking water. It empowers the EPA to set drinking water standards and to oversee the water providers who actually implement those standards. It also includes provisions for the protection of surface waters and wetlands, in support of drinking water quality. In California, the EPA delegates some of its implementation authority to the California Department of Public Health's Division of Drinking Water and Environmental Management. In addition, the Santa Clara Valley Water District (SCVWD) develops and coordinates compliance of all their members (including the City) with their District-wide Groundwater Management Plan (Santa Clara Valley Water District 2001) that includes provisions for protection of groundwater resources throughout the area.

The City of Santa Clara is also part of a regional association with twelve other cities in the region—the Santa Clara Valley Urban Runoff Pollution Prevention Program (SCVURPPP) in association with Santa Clara County and the Santa Clara Valley Water District. Program participants share an area-wide NPDES permit to discharge stormwater from their storm drain systems into San Francisco Bay. Per the NPDES permit requirements, the SCVURPPP produces and regularly updates an Urban Runoff Management Plan (URMP), which defines requirements for pollution control to which all members must adhere. Specifically, Provision C.3 of the NPDES permit requires site design principles and storm water treatment controls that improve the quality of runoff (such as sedimentation ponds) prior to discharging storm water into any City system.

EXISTING CONDITIONS

The City of Santa Clara is situated on an alluvial plain within the Santa Clara Valley, which extends southward from the southern end of San Francisco Bay. Ground surface elevations within City limits range from near sea level at the northern side, to 175 feet above mean sea level at the southern side of the City. The climate is semi-arid, with warm, dry weather from late spring to early fall. Yearly precipitation averages 14.8 inches per year, most of which falls between November and April. Average monthly rainfall from May to October is less than 1 inch per month, and drops to essentially zero in July and August (City of Santa Clara 2005).

Public Water Supply

The City's public water supply comes from four sources, described below (City of Santa Clara 2005, Santa Clara Valley Water District 2008). Percentages of total supply are given as of 2004-2005, when the City's current Urban Water Management Plan (City of Santa Clara 2005) was prepared.

- Groundwater provides about 66 percent of the City's potable supply; as of 2004-2005, when the Urban Water Management Plan was prepared, the City was operating 27 wells within City limits.
- The San Francisco Public Utilities Commission's (SFPUC's) San Francisco Water Department supplies about 20 percent of the City's potable supply. SFPUC supply delivered to the City is derived from Sierra Nevada and several other surface water supplies.

- The Santa Clara Valley Water District (SCVWD) provides slightly less than 20 percent of the City's potable supply. SCVWD supply draws on a combination of Sierra Nevada (Hetch Hetchy) surface water sources, local surface supply, and local groundwater.
- Recycled Water makes up approximately another 10 percent of the City's overall water supply. It is supplied from the jointly-owned San José—Santa Clara Water Pollution Control Plant (WPCP), which is an advanced tertiary treatment plant. WPCP effluent water meets California Administrative Code (CAC) Title 22 Division 4 requirements for "unrestricted use," but recycled water is not used for potable supply. Its primary use is irrigation of large turf areas at golf courses, parks, and schools. Several City industries also use recycled water as industrial process water, in cooling towers, or for toilet flushing in dual-plumbed buildings. In addition, the City's electric utility operates a 147-MW power plant that uses recycled water exclusively for cooling and steam for power production (City of Santa Clara 2005).

There have been no water use restrictions in the City for the past 10 years, indicating that water supply has kept pace with the growing population of the City (DeGroot pers. comm.)

Surface Water

The principal surface water drainages in the City are the Guadalupe River, San Tomás Aquino Creek, and Calabazas Creek, all of which originate in the largely undeveloped Santa Cruz Mountains and drain northward across the urbanized Santa Clara Valley floor to discharge into San Francisco Bay, as shown on Figure 7-4.

The Guadalupe River drains a watershed of about 170 square miles. The mainstem Guadalupe River consists of approximately 20 miles of channel that flows through the City of San José and forms the City's northeastern limit before entering Alviso Slough, which in turn drains to the Bay. San Tomás Aquino Creek consists of approximately 17 miles of channel and flows through the center of the City to discharge into Guadalupe Slough at the northwestern corner of the City. Calabazas Creek, about 13 miles long in total and draining a 21–square-mile watershed, flows along the western side of the City, and also discharges into Guadalupe Slough, which in turn flows northwest to the Bay. All three of these regionally important streams have been channelized and substantially modified to reduce flood hazards; flood protection and other aspects of creek management, such as vegetation and sediment maintenance, are the purview of the Santa Clara Valley Water District (SCBWMI 2001). Table 7-3 summarizes their designated beneficial uses and known water quality impairments.

Saratoga Creek and Calabazas Creek are included on the 2006 Clean Water Act Section 303(d) list for water quality limited surface water. Both Calabazas Creek and its tributary Saratoga Creek are scheduled for a TMDL study for the pesticide diazinon, which is considered carcinogenic. A TMDL for mercury in the Guadalupe River sub-basin is also in process (San Francisco Bay Regional Water Quality Control Board 2006).

Groundwater

The City is located in the Santa Clara sub-basin of the San Francisco Bay Hydrologic Region. The Santa Clara sub-basin lies within a fault-bounded structural trough flanked by the Santa Cruz Mountains to the west and the Diablo Range to the east (see additional discussion in the

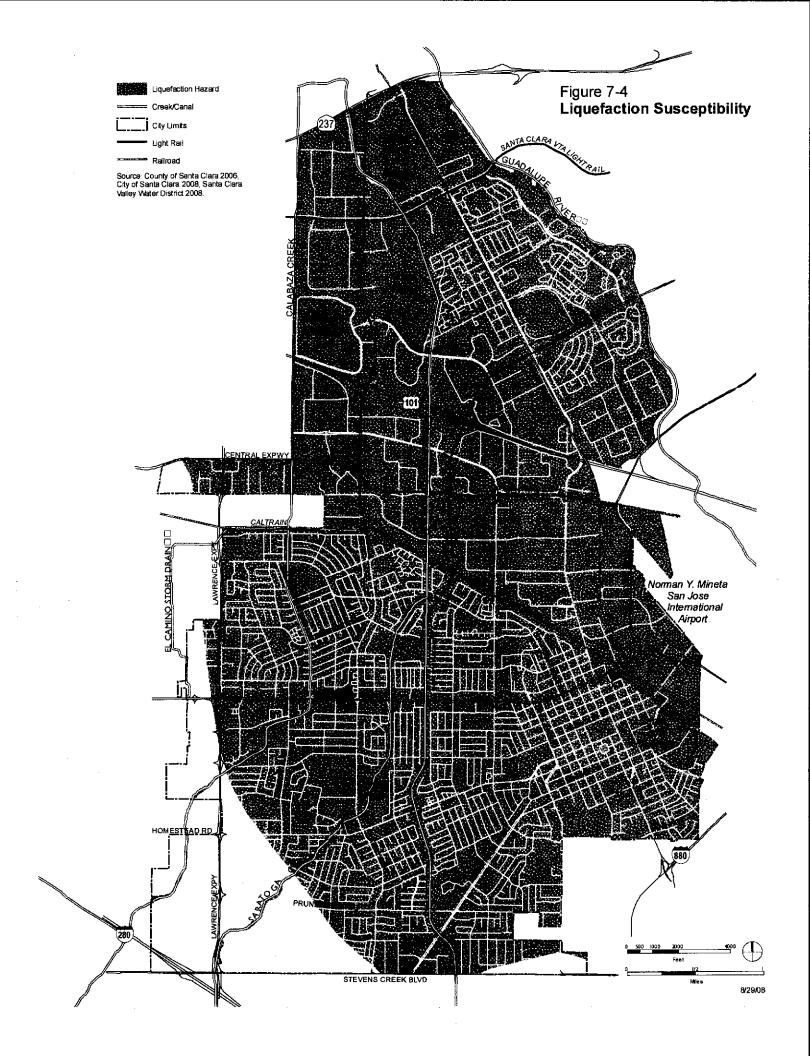


Table 7-3: Principal Santa Clara Area Streams—Beneficial Uses and Known Impairments

		Water Quality Impairments			
Stream	Beneficial Uses	Contaminant	Source		
Guadalupe River	None identified	Diazinon Mercury	Urban runoff, storm sewers Mine tailings		
San Tomás Aquino Creek	None identified	None identified	N/A		
Saratoga Creek	Agricultural supply Freshwater replenishment Groundwater recharge Cold freshwater habitat Warm freshwater habitat Wildlife habitat Water contact recreation Noncontact recreation	Diazinon	Urban runoff, storm sewers		
Calabazas Creek	Agricultural supply Groundwater recharge Cold freshwater habitat Warm freshwater habitat Wildlife habitat Water contact recreation Noncontact recreation	Diazinon	Urban runoff, storm sewers		

Source: San Francisco Bay Regional Water Quality Control Board 2006, 2007

Geology, Soils, and Seismicity section of this chapter), extending from the San Francisco Bay margin south to the groundwater divide at the town of Morgan Hill (California Department of Water Resources 2003).

Water production wells in the Santa Clara Valley average about 278 feet in depth below ground surface, and yield an average of 425 gallons per minute. The principal aquifers are sand and gravel beds in alluvial and fluvial deposits of Pleistocene through Holocene age. Shallow groundwater in the basin is typically unconfined. Around the Bay margin, and as far south as the southern edge of San José, groundwater below depths of 150–200 feet is under confined or semiconfined conditions because discontinuous aquifers are isolated by abundant impermeable clay and silt layers. Farther south, the aquifer is unconfined, and natural groundwater recharge occurs via infiltration through streambeds and permeable valley-floor sediments. SCVWD also operates groundwater percolation ponds as part of their long-term water management strategy (Jones & Stokes 2001, Santa Clara Valley Water District 2008).

Prior to development, the groundwater flow pattern in the Santa Clara Valley largely paralleled surface-water drainage. In the early years of the 20th century, the pressure surface was above the elevation of the valley floor in much of the area, and artesian wells were common. By the late 1960s, heavy use of groundwater had lowered the water table by more than 200 feet, resulting in widespread subsidence and in saltwater incursion detectable as much as ten miles inland. These trends have been arrested by increased reliance on imported surface water and improved water management in the last three decades (Jones & Stokes 2001).

Groundwater quality in the South Bay region varies greatly. In general, quality is adequate for designated beneficial uses (Table 7-4); groundwater contributes about 50 percent of the Valley's overall water supply, and almost 70 percent of the City's supply. However, hazardous materials contamination associated with industrial, high-tech, and military aviation uses is a local concern, leading to extensive remediation efforts in some areas; these issues are discussed in more detail in the *Hazards* section of this chapter (U.S. Geological Survey 1995). Saltwater intrusion driven in part by groundwater overdraft has also been a concern in Bay margin areas.

The City's Water Utility reports that City production wells consistently meet the applicable water quality criteria. Total dissolved solids are reportedly not an issue for the City, in contrast to other areas adjacent to San Francisco Bay where saltwater intrusion has been an issue. Also, given the long agricultural history of the Santa Clara Valley, nitrates have been problematic in some areas, but the City reports that nitrate levels in their wells are below one-half allowable levels. Manganese, a naturally occurring metal in groundwater, has been detected at several wells, and the City has installed manganese removal systems where needed (DeGroot pers. comm.)

7.3 BIOLOGICAL RESOURCES

This section provides a general description of biological resources within the City of Santa Clara, including resources that may require General Plan policies or guidelines to institute protection. The regulatory environment will be assessed and analyzed to determine associated constraints and opportunities. This information includes a summary of the State, federal, and local regulations and policies that protect biological resources; and a description of the City's plants, fish, and wildlife, including special-status species.

REGULATORY ENVIRONMENT

The federal Endangered Species Act (ESA) of 1973 (16 USC Sec. 1531 et seq.) protects fish and wildlife species that are listed as threatened or endangered, and their habitats. The ESA is administered by the U.S. Fish and Wildlife Service (USFWS) for terrestrial and freshwater species and by the National Oceanographic and Atmospheric Administration's National Marine Fisheries Service (NMFS) for marine species and anadromous fishes. Fish and wildlife are also protected under the Fish and Wildlife Coordination Act, Migratory Bird Treaty Act, and Bald and Golden Eagle Protection Act.

Within the State of California, several additional acts and regulations protect the environment and wildlife. The California Endangered Species Act (CESA) protects wildlife and plants listed as threatened and endangered by the California Fish and Game Commission, as well as species identified as candidates for such listing. It is administered by the California Department of Fish and Game (DFG). The California Fish and Game Code provides protection from take for a variety of species, separate from and in addition to the protection afforded under CESA. The Code defines take as "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill." The California Native Plant Protection Act (CNPPA) preserves, protects, and enhances endangered and rare plants in California. It specifically prohibits the importation, take, possession, or sale of any native plant designated by the California Fish and Game Commission as rare or endangered, except under specific circumstances identified in the Act.

The City is adjacent to the area that will be covered by the Santa Clara Valley Habitat Plan (Habitat Plan), which is a conservation program being developed through a partnership

between Santa Clara County, the Cities of San José, Morgan Hill, and Gilroy, the Santa Clara Valley Water District, the Valley Transportation Authority, California State Parks, the U.S. Fish and Wildlife Service, the California Department of Fish and Game, and the National Marine Fisheries Service. The City is not participating in the Habitat Plan, but could benefit from its findings as it will include a conservation program designed to avoid and minimize impacts of development activities where possible, and mitigation measures for any impacts that cannot be avoided.

EXISTING CONDITIONS

The City's location at the south end of San Francisco Bay, temperate climate, and diverse landscape combine to support one of the most biologically diverse regions in the world. However, there are few natural areas within Santa Clara, where native habitats have largely been replaced with urban hardscape accompanied by ornamental landscaping. Although some of these areas support native flora and fauna, habitats in the City are generally not representative of the unique environs found through the Bay Area.

One important exception is the Ulistac Natural Area, a 40-acre open space parcel located along the Guadalupe River and owned and maintained by the City. Restoration at this site has focused on returning the site to a natural condition by planting native species and removing invasive non-native vegetation, and the Ulistac Natural Area now supports multiple natural communities, including grassland, oak savannah, oak woodland, sycamore woodland, riparian woodland, coastal scrub, and emergent wetlands. Because of its location adjacent to one of the South Bay's main riverine systems, this natural area provides a buffer against the impact of urbanization on the river system as well as offering important movement and foraging habitats for wildlife moving along the river corridor. It supports many native species of songbirds, insects, amphibians, and small mammals. These species and the overall regeneration of the vegetation on the site following restoration have been the focus of research by Santa Clara University's Environmental Studies Institute (City of Santa Clara 2008).

Vegetative Communities

Non-Native Annual Grassland

Non-native annual grassland is the most common "natural community" or undeveloped habitat type in Santa Clara. In urban areas such as the City, this habitat type is often called *ruderal*, or disturbed. This community is composed almost entirely of annual grasses and other herbaceous species. Plants typical of this community include several species of brome (*Bromus* spp.), wild oats (*Avena* spp.), filarees (*Erodium* spp.), schismus (*Schismus* spp.), fescues (*Vulpia* spp.), and a variety of native wildflowers such as California poppy (*Eschscholtzia californica*) and phacelia (*Phacelia* spp.), along with other non-native species.

Ruderal grassland areas can be found in freeway cloverleafs, along roadways, and in vacant, undeveloped urban lots. Although they do not support many native species, they can be a refuge for many common species, such as raccoon (*Procyon lotor*), dark-eyed junco (*Junco hyemalis*), lesser goldfinch (*Carduelis psaltria*), and many others. Within the City, special-status species that may occur in ruderal areas include western burrowing owl (*Athene cunicularia*) and Congdon's tarplant (*Centromadia parryi* spp. *congdonii*). These species are discussed further in the *Special-Status Species* section below.

Riparian/Riverine

As discussed in the preceding section, three major waterways flow through the City. Calabazas Creek runs along the west boundary of the City and the Guadalupe River defines its northeast boundary. San Tomás Aquino Creek and its largest tributary, Saratoga Creek, also pass through the City.

As identified in the previous section, all of these creeks have been modified for flood control purposes. As a result, there is limited native riparian vegetation along these creek corridors. Calabazas, Saratoga, and San Tomás Aquino creeks are concrete-lined trapezoidal flood control channels with little native riparian vegetation, while the Guadalupe River is a large, mostly earthen channel, portions of which support some in-channel emergent vegetation and remnant riparian corridor. The following section includes an assessment of these streams' ability to support native fisheries, including special-status species.

SPECIAL STATUS SPECIES

Special Status Plant Species

Table 7-5 is a current list of plant species that have been recorded in or near the City of Santa Clara, based on a review of CNPS and CNDDB sources. These species should generally be addressed during environmental review of projects permitted under the proposed General Plan Update. Most of these species are unlikely to occur in the City because of the narrow range of habitats available in this largely developed area. However, the City's ruderal grasslands offer suitable habitat for Congdon's tarplant (Centromadia parryi ssp. congdonii), and this species should be considered moderately- to highly-likely to occur.

Table 7-5: Special-Status Plant Species Recorded in San José West and Milpitas Minute Quadrangles

Scientific and Common Name	Federal Status	State Status	CNPS Status	Habitat	Potential to Occur in General Plan Area
Astragalus tener var. tener Alkali milk vetch			1B.2	Alkali playa, valley and foothill grassland	Very low; no alkali playa in the City.
Atriplex suppressa Brittlescale	_	_	1B.2	Valley and foothill grasslands, usually in alkali scalds or playas	Very low; no alkali scalds in the City.
Atriplex jaoquiniana San Joaquin spearscale			IB.2	Seasonal alkali wetlands or alkali sink scrub	Very low; no alkali wetlands or alkali sinks in the City.
Centromadia parryi ssp. congdonii Congdon's tarplant		<u> </u>	1B.2	Valley and foothill grasslands, sometimes found in ruderal grasslands in urban areas	Moderate to high; available habitat in ruderal grasslands throughout the City.
Chorizanthe robusta var. robusta Robust spineflower	FE	Al-Milaton	1B.1	Cismontane woodland, coastal dunes	Very low; no coastal dunes in the City.
Cordylanthus maritimus ssp. Palustris Point Reyes bird's beak	_	_	∦B.2	Coastal salt marsh	Very low; no coastal salt marsh in the City.
Eryngium aristulatum var. hooveri Hoover's button-celery	· · · · · · · · · · · · · · · · · · ·	_	IB.I	Alkali wetlands and vernal pools	Very low; no alkali wetland or vernal pools in the City.
Hoita strobilina Loma Prieta hoita	<u>—</u>		1B.1	Chaparral and cismontane habitat, sometimes in serpentine areas	Very low; no chaparral habitat in the City.
Lasthenia conjugens Contra Costa goldfields	FE	_	1B.1	Vernal pools, swales and low depressions in grasslands	Very low; no vernal pools in the City.
Malacothamnus arcuatus Arcuate bush-mallow			1B.2	Chaparral scrub	Very low; no chaparral scrub in the City.
Malacothamnus hallii Haii's bush-mallow		_	1B.2	Chaparral scrub	Very low; no chaparral scrub in the City.
Navarretia prostrate Prostrate vernal pool navarretia	_		1B,1	Alkali soils in grassland or vernal pools	Very low; no vernal pools in the City.
Plagiobothrys glaber Hairless popcorn flower		_	IA	Coastal salt marsh and alkali meadows	Very low; no coastal salt marsh or alkali meadows in the City
Suaeda californica	FE		1B.1	Margins of coastal	Very low; no coastal

Scientific and Common Name	Federal Status	State Status	CNPS Status	Hobitat	Potential to Occur in General Plan Area
California seablite				salt marsh	salt marsh in the City.
Tropidocarpum capparideum Caper-fruited tropicarpum	_	_	1B.1	Alkali clay in valley and foothill grassland	Very low; no alkali clay habitats in the City.

Status Definitions:

USFWS

FE: Species designated as endangered under the federal Endangered Species Act. Endangered = "any species in danger of extinction throughout all or a significant portion of its range."

CNPS

IA Plants presumed extinct in California

1B Plants Rare, Threatened, or Endangered in California and Elsewhere

CNPS Threat Ranking

0.1 Seriously threatened in California (high degree/immediacy of threat)

0.2 Fairly threatened in California (moderate degree/immediacy of threat)

Source: CNDDB 2008, CNPS 2008, USFWS 2008

Special Status Wildlife Species

The following table is a current list of wildlife species that have been recorded in or near the City of Santa Clara, based on USFWS and CNDDB sources. These are species that would generally be addressed during the environmental review of projects permitted under this proposed General Plan Update, on recommendation from the regulatory agencies. Most are unlikely to be present because of the narrow range of natural habitats available in this largely developed area.

Table 7-6: Special-Status Wildlife Species Recorded in the San José West and Milpitas Minute Quadrangles

Common and Scientific Name	Federal Status	State Status	Habitat	Potential to Occur in General Plan Area
Invertebrates				
Bay checkerspot butterfly Euphydryas editha bayensis	FT		Native grasslands on outcrops of serpentine soil; California plantain and owl's clover are host plants	Very low; no serpentine grassland habitat in the City.
California brackishwater snail Tryonia imitator			Coastal lagoons, estuaries and salt marshes from Sonoma to San Diego county	Very low; no estuarine habitat in the City.
Conservancy fairy shrimp Branchinecta conservatio	FE	_	Large, deep vernal pools in annual grasslands	Very low; no vernal pools in the City.
Vernal pool tadpole shrimp Lepidurus packardi	FE		Vernal pools and ephemeral stock ponds from Shasta to Merced County	Very low; no vernal pools in the City.

Common and Scientific Name	Federal Status	State Status	Habitat	Potential to Occur in General Plan Area
Reptiles and Amphibians				
Alameda whipsnake Masticophis lateralis euryxanthus	FT	ST	Valleys, foothills, and low mountains associated with northern coastal scrub or chaparral habitat; requires rock outcrops for cover and foraging	Very low; outside of species' range.
California red-legged frog Rana aurora draytonii	FT	SC	Permanent and semi- permanent aquatic habitats, such as creeks and cold-water ponds, with emergent and submergent vegetation.	Low; some low-quality habitat could occur in riverine areas, although modified nature of channels and lack of adjacent upland habitat makes species' presence unlikely.
California tiger salamander Ambystoma californiense	, FT	SC	Small ponds, lakes, or vernal pools in grass-lands and oak woodlands for larvae; rodent burrows, rock crevices, or fallen logs for cover for adults and for summer dormancy	Low; some low-quality habitat could occur in riverine areas, although modified nature of channels and lack of adjacent upland habitat makes species' presence unlikely.
Western pond turtle Actinemys marmorata	<u>-</u>	sc	Permanent or nearly permanent bodies of water in many habitat types	Moderate; modified stream systems limit available habitat for this species in the City.
Fish				
Delta smelt Hypomesus tronspacificus	,FT	ST	Occurs in estuary habitat in the Delta where fresh and brackish water mix in the salinity range of 2–7 parts per thousand. Primarily in the Sacramento—San Joaquin Estuary.	Very low; no estuarine habitat in the City.
Central California coast steelhead Oncorhynchus mykiss	FT	_	Russian River to Soquel Creek, Santa Cruz Co. Cold, clear water with clean gravel of appropriate size for spawning. Steelhead migrate to the ocean to feed and grow until sexually mature.	Low – Calabazas Creek and San Tomas Aquino Creek ² ; Moderate – Guadalupe River ³ . See Steelhead Occurrence Details in Notes below.
Central Valley steelhead Oncorhynchus mykiss	FT	_	Occurs in well- oxygenated, cool, riverine habitat with water	Very low; outside species' range.

Common and Scientific Name	Federal Status	State Status	Habitat	Potential to Occur in General Plan Area
		4 10 10 10 10 10 10 10 10 10 10 10 10 10	temperatures from 7.8 to 18°C in Sacramento River and tributary Central Valley rivers.	
Sacramento River winter- run Chinook salmon Oncorhynchus tshawytscha	FE	SE	Occurs in well- oxygenated, cool, riverine habitat with water temperatures from 8.0 to 12.5°C in mainstem Sacramento River below Keswick Dam.	Very low; outside species' range.
Central Valley spring-run Chinook salmon Oncorhynchus tshawytscha	FT	ST	Has the same general habitat requirements as winter-run Chinook salmon but only occurs in upper Sacramento and Feather River.	Very low; outside species' range.
Birds		-		
Alameda song sparrow Melospiza melodia pusillula		SC	Brackish marshes associated with pickleweed along fringe of South San Francisco Bay	Very low; no brackish marsh habitat in the City.
American peregrine falcon Falco peregrinus anatum	FD	SE, FP	Near wetlands, lakes, rivers, or other water, on cliffs, banks, dunes, mounds and man-made structures	Moderate; nests in urban areas with tall buildings or elevated bridges. Nesting records in San José.
California clapper rail Rallus longirostris obsoletus	FE	SE,FP	Restricted to salt marshes and tidal sloughs; usually associated with heavy growth of pickle-weed; feeds on mollusks removed from the mud in sloughs	Very low; no tidal marsh habitat in the City.
Cooper's hawk Accipiter cooperii	_		Nests in a wide variety of habitat types, from riparian woodlands and digger pine-oak woodlands through mixed conifer forests	Moderate; known to nest along riparian corridors in urban areas.
Saltmarsh common yellowthroat Geothlypis trichas sinuosa		SC	Freshwater marshes in summer and salt or brackish marshes in fall and winter; requires tall grasses, tules, and willow thickets for nesting and cover. Found only in 9-counties surrounding San	Moderate; habitat is available along Guadalupe River but it is unknown whether subspecies' range extends into the City.

Common and Scientific Name	Federal Status	State Status	Habitat	Potential to Occur in General Plan Area
			Francisco Bay.	
Tricolored blackbird Agelaius tricolor		sc	Nests in dense colonies in emergent marsh vegetation, such as tules and cattails, or upland sites with blackberries, nettles, thistles, and grainfields.	Low; limited habitat occurs along Guadalupe River, though breeding colonies typically do not occur in brackish areas and there are no recorded nesting occurrences within the City.
Western burrowing owl Athene cunicularia		SC	Open, dry annual or perennial grasslands, scrublands, characterized by low-growing vegetation	High; known occurrences in ruderal areas in the northern part of the study area and in nearby developed areas.
Western snowy plover Charadrius alexandrinus nivosus	FT	sc	Coastal beaches above the normal high tide limit in flat, open areas with sandy or saline substrates; vegetation and driftwood are usually sparse or absent	Very low; no coastal beaches or abandoned salt pans in the City.
White-tailed kite Elanus leucurus	 -	FP	Low foothills or valley areas with valley or live oaks, riparian areas, and marshes near open grasslands for foraging	Low, but species is known to nest along riparian corridors in urban areas.
Mammals				
Pallid bat Antrozous pallidus	_	sc	Grassland, shrublands, Woodlands and forests; dry Habitats	Low; there is some potential for all bat species to forage along the riverine areas in the City of Santa Clara. There is very limited roosting habitat within the City.
Salt-marsh harvest mouse Reithrodontomys raviventris	FE	SE,FP	Salt marshes with a dense plant cover of pickle-weed and fat hen; adjacent to an upland site	Very low; no tidal marsh habitat in the City.
Salt-marsh wandering shrew Sorex vagrans halicoetes		sc	Mid-elevation salt marsh habitats with dense growths of pickleweed;	Very low; no tidal marsh habitat in the City.
San Joaquin kit fox Vulpes macrotis mutica	FT	SE	Grassland and oak woodlands; principally occurs in the San Joaquin Valley and adjacent open foothills to the west; recent records from 17	Very low; outside species' range.

Common and Scientific Name	Federal Status	State Status	Habitat	Potential to Occur in General Plan Area
			counties extending from	· · · · · · · · · · · · · · · · · · ·
			Kern County north to	
			Contra Costa County	

Note: Steelhead Occurrence Details

 According to Leidy et al. (2005) multiple barriers exist in the stream. Fish distribution surveys conducted in the mid-1980's found no steelhead in the creek (Leidy et al. 2005). Current surveys of the creek have not been completed but habitat value for steelhead in the creek is low.

Fish survey efforts are summarized by Leidy et al. (2005), but generally concluded that steelhead use of San Thomas Aquino Creek is possible but unlikely. There is a permanent barrier at the confluence of San Thomas Aquino Creek and Saratoga Creek, preventing passage into the upper watershed. Based on informal surveys of the creek, it is believed not to support use by steelhead currently (J. Abel pers. comm. as cited in Leidy et al. 2005). This includes the reach of San Tomas Aquino Creek that passes through the City of Santa Clara.

The long history of steelhead occurrence in the Guadalupe Watershed is discussed by Leidy et al. (2005). Steelhead have been documented in the Guadalupe River system as recently as 2002 (Leidy et al. 2005). It is assumed that the reaches of the Guadalupe River that pass through the City have potential to support steelhead.

Status Definitions:

USFWS: US Fish and Wildlife Service

FE: Species designated as endangered under the federal Endangered Species Act. Endangered = "any species in danger of extinction throughout all or a significant portion of its range."

FT: Species designated as threatened under the Federal Endangered Species Act. Threatened = "species likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range."

FD: Delisted under the federal Endangered Species Act.

DFG

SE: Endangered = "a species is endangered when its prospects of survival and reproduction are in immediate jeopardy from one or more causes."

ST: Threatened = "a species that, although not presently threatened with extinction, is likely to become an endangered species in the foreseeable future in the absence of the special protection and management efforts required by this Act" (California Endangered Species Act).

SC: Species of Special Concern.

FP: Fully Protected by the State of California.

In summary, the biological resources in the City of Santa Clara are limited and constrained by the urban nature of the planning area. However, despite the urban nature of the City, policies to protect and even enhance any remaining natural areas would be ecologically beneficial to the region and aesthetically beneficial to the City.

7.4 ENERGY AND MINERAL RESOURCES

This section discusses energy and mineral resource conditions and issues relevant to the General Plan Update. Although the statutory definition of minerals excludes natural gas and petroleum (see Terminology in Appendix A), they are discussed within the context of mineral resources as suggested by the General Plan Guidelines (Office of Planning and Research 2003).

REGULATORY ENVIRONMENT

Mineral resources extraction is regulated at the State level, with substantial implementation authority delegated to local jurisdictions. State laws on drilling and production activities for oil, gas and geothermal resources take precedence over local ordinances. Counties and municipalities may enforce additional regulations as long as they do not conflict with State

regulations (86 Cal. Att'y Gen. Op. No. 03-105 [June 19, 2003], available at http://ag.ca.gov/opinions/published/03-105.pdf).

The principal legislation addressing mineral resources in California is the Surface Mining and Reclamation Act of 1975 (SMARA) (Public Resources Code Sec. 2710-2719), which was enacted in response to land use conflicts between urban growth and essential mineral production. The Stated purpose of SMARA is to provide a comprehensive surface mining and reclamation policy that will encourage the production and conservation of mineral resources while ensuring that adverse environmental effects of mining are prevented or minimized; that mined lands are reclaimed and residual hazards to public health and safety are eliminated; and that consideration is given to recreation, watershed, wildlife, aesthetic, and other related values. SMARA governs the use and conservation of a wide variety of mineral resources, although some resources and activities are exempt from its provisions, including excavation and grading conducted for farming, construction, or recovery from flooding or other natural disaster. Under California Public Resources Code §2762(a), the City must adopt mineral resource management policies as part of its General Plan that assist in the management of land uses that affect areas of Statewide and regional significance and that emphasize the conservation and development of identified significant mineral deposits. Section 2763 requires that City land use decisions be consistent with the mineral resource management policies in the General Plan.

The California Oil and Gas Conservation Act specifically regulates extraction of oil and gas resources, as per the State Public Resources Code §3000-3690 and §3780-3787. The Act regulates the production of oil and gas, including the supervision of the drilling, operation, maintenance, and abandonment of wells in a manner to prevent damage to life, health, property, and natural resources; to prevent damage to underground oil and gas deposits or to underground or surface waters; to increase the ultimate recovery of oil and gas; and to encourage the wise development of the oil and gas resources.

Geothermal resources within the City are regulated by the California Geothermal Resources Law, under Public Resources Code §3700-3776. The regulations are embodied in 14 California Administrative Code, Division 2, Chapter 4, \$1900-1993, the "State-Wide Geothermal Regulations." The regulations cover siting, permitting, drilling, engineering details, maintenance, plugging, and abandonment.

The City further regulates mineral resource extraction through Section 18.05.040 of the Santa Clara Municipal Code, which allows commercial excavation of building or construction materials as a permitted conditional use in Heavy Industrial zoning districts. However, Section 18.05.030 prohibits any manufacturing, processing, assembling, research, wholesale, or storage uses that are objectionable by reason of the production of offensive noise, smoke, odor, dust, noxious gases, vibrations, glare, heat, fire hazards, industrial wastes, or handling of explosives or dangerous materials.

EXISTING CONDITIONS

Mineral Resources

Since the City does not have known mineral resources of significance, City land use planning is not constrained by the need to plan for resource extraction, or to balance extractive uses with other types of land uses.

The City is located in an area zoned MRZ-1 for aggregate materials (Kohler-Antablin 1996), which means it is an area where adequate information indicates that no significant mineral deposits are present. The area is also not known to support significant resources of other mineral resources. No mineral resources are currently being extracted in the City. The Office of Mine Reclamation's list of mines regulated under SMARA (the AB 3098 List) does not include any mines in the City of Santa Clara.

In light of the City's current built-out condition, and residents' expressed desire to maintain the City's existing aesthetic atmosphere and single-family residential orientation, extractive activities are unlikely to be considered appropriate in the foreseeable future. The absence of mineral resources is relevant to the Land Use Element, which otherwise requires an analysis of the resources and provisions to ensure their continued availability (City of Santa Clara 2002).

A recent study by the U.S. Geological Survey reviewed information related to historic oil exploratory wells drilled in the Santa Clara Valley between 1891 and 1929 as well as data from more recent deep borings conducted for other reasons. None of the wells were within the City. Stanley concluded that although some undiscovered accumulations of oil along the southwestern margin of the valley may be of commercial size, exploration is unlikely to be feasible because of current residential, recreational, commercial, and industrial land uses. No evidence was presented suggesting the presence of exploitable oil or gas resources within the City of Santa Clara (Stanley et al. 2002). Records of the State's Division of Oil, Gas & Geothermal Resources show no historic or active oil, gas or geothermal wells within the City of Santa Clara (Division of Oil, Gas, and Geothermal Resources 2003)

Energy

Although the City is largely built out, and future growth will be accommodated almost entirely through infill and redevelopment, development associated with the General Plan Update will nonetheless consume energy through oil and natural gas consumption, electricity use, and transportation. Multiple aspects of the general plan have energy implications, including land use, housing, transportation, and water.

Electrical Power

The City of Santa Clara owns and operates the municipal electric utility Silicon Valley Power (SVP). SVP services over 50,000 residential, commercial, industrial, and municipal customers in the City of Santa Clara. It owns, operates and participates in more than 510 megawatts of electric generating resources supplemented by purchase agreements for 261 MW of additional capacity. 228 MW or 44 percent of the SVP-owned generating capacity comes from renewable energy sources, either geothermal, hydroelectric, or wind. SVP also has an ownership interest in transmission facilities. Table 7-7 is an overview of SVP's power generation resources.

In 2008, SVP's estimated peak load will be approximately 480 MW and estimated total electricity sales will be approximately 2,700 GWh. This is expected to increase by about 1.1 percent annually to a peak load of 534 MW and sales of 2,980 GWh in 2018. Projected population growth for the Pacific Gas and Electric Company (P&GE) Planning Area, of which Silicon Valley Power's service area is a part, is 1.3 percent annually through 2018' (California

² The PG&E Planning Area includes the North Coast and Mountain Zone, the Sacramento Region, the Valley Region, the East Bay Region, and the San Francisco Region.

Energy Commission 2007a). Projected population growth for Santa Clara County is 1.1 percent annually from 2010 to 2020 (Santa Clara County 2007). Figure 7-8 shows SVP's peak load and electricity resource forecasts.

Table 7-7: Silicon Valley Power Generation Resources

Generation Resource	Туре	Total Capacity	% Capacity to SVP	Capacity to SVP
Donald Van Raesfeld Power Plant, City of Santa Clara	Natural Gas	147 MW	100%	147 MW
Cogeneration Plant No. 1, City of Santa Clara	Natural Gas	7 MW	100%	7 MW
Gianera Generating Station, City of Santa Clara	Natural Gas	49.5 MW	100%	49.5 MW
M-S-R Bighorn Wind Project, Bickleton, WA	Wind	200 MW	52.5% Purchase Agreement	105 MW
NCPA Geothermal Project, Sonoma/Lake County Border, CA	Geothermal	238 MW	44%	105 MW
Stoney Creek Hydroelectric System, Stoney Creek River System, CA	Hydroelectric	11.6 MW	100%	II.6 MW
Grizzly Hydroelectric Project, Plumas County, CA	Hydroelectric	20 MW	100%	20 MW
Altamont Wind Power Project, Alameda County, CA	Wind	20 MW	100% Purchase Agreement	20 MW
NCPA Combustion Turbine Project No. 1; Roseville, Alameda and Lodi, CA	Natural Gas	124.5 MW	25%	31 MW
Western Area Power Administration (WAPA), Sacramento, CA	Hydroelectric	N/A	Purchase Agreement	136 MW
M-S-R/San Juan, Four Corners, NM	Coal	507 MW	10%	51 MW
NCPA Calaveras Hydroelectric Project, Stanislaus River Basin, CA	Hydroelectric	247 MW	37%	91.4 MW
		Total Own	ed or Purchased	774.5 MW
		Т	otal SVP Owned	513.5 MW

Source: Silicon Valley Power, City of Santa Clara Electric Resources, 2006.

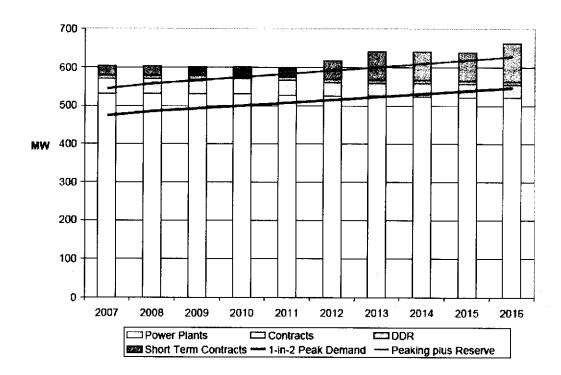


Figure 7-8: SVP 10-Year Load/Resource Balance

Source: Silicon Valley Power filing, January 31, 2007.

For comparison, Statewide electricity demand is expected to increase at 1.25 percent annually and peak demand is expected to increase at 1.35 percent annually (California Energy Commission 2007b).

Fuel Consumption

Transportation accounts for 41 percent of California's overall energy use (California Energy Commission 2007a). Since Santa Clara and surrounding communities are largely developed, the City's population growth is expected to be only about 1 percent annually (Santa Clara County 2007). If transportation patterns remain similar to current patterns, vehicle miles traveled may increase slightly due to the projected population increase but total fuel use should decline as automobile fleet fuel efficiency improves. Changes in economic conditions (requiring changes in the average commute) or driver habits (such as increased car pooling or use of mass transit) could affect future fuel consumption significantly.

7.5 HAZARDOUS MATERIALS

This section discusses hazardous materials-related issues as they bear on the General Plan update.

REGULATORY ENVIRONMENT

State and federal laws require detailed planning to ensure that hazardous materials are properly handled, used, stored, and disposed of, and in the event that such materials are accidentally released, to prevent or to mitigate injury to health or the environment. Hazardous materials are defined and federally regulated primarily by laws and regulations administered by the U.S. Environmental Protection Agency (EPA), the U.S. Occupational Safety and Health Administration (OSHA), and the U.S. Department of Transportation (DOT) for protection of worker health and safety, the environment, and transportation respectively.

Within the State, The California Environmental Protection Agency (Cal EPA), Department of Toxic Substances Control (DTSC) regulates the generation, transportation, treatment, storage, and disposal of hazardous waste. These laws require hazardous materials users to prepare written plans, such as Hazard Communication Plans and Hazardous Materials Business Plans. Laws and regulations require hazardous materials users to store these materials appropriately and to train employees to manage them safely. Transportation of hazardous materials within California is primarily the responsibility of the California Highway Patrol (CHP) and the California Department of Transportation (Caltrans). Remediation of contaminated sites is generally performed under the oversight of DTSC and the Regional Water Quality Control Board (RWQCB). The California Division of Occupational Safety and Health (Cal OSHA) assumes primary responsibility for developing and enforcing standards for safe workplaces and work practices.

In addition to the RWQCB, regional and local management and control of hazardous materials includes the Bay Area Air Quality Management District (BAAQMD), Santa Clara Valley Water District, and Santa Clara County. The BAAQMD is responsible for the permitting of industrial air emissions and sets and enforces air quality standards. The Santa Clara Valley Water District has coordinating oversight responsibilities (along with the RWQCB) on groundwater plumes that could affect water supplies. The Santa Clara County Planning Department administers the Santa Clara County Hazardous Waste Management Plan.

Finally, the Santa Clara Fire Department Hazardous Materials Division serves as the City's Certified Unified Program Agency (CUPA). As a CUPA, the Hazardous Materials Division is responsible for implementing the following programs: Hazardous Waste Generator Program (California Health and Safety Code Chapter 6.5); Hazardous Waste Tiered Permitting (California Health and Safety Code Chapter 6.5); Underground Storage Tanks (California Health and Safety Code Chapter 6.7); Aboveground Storage Tanks (California Health and Safety Code Chapter 6.67); Hazardous Materials Business Plans (California Health and Safety Code Chapter 6.95); and California Accidental Release Prevention Program (California Health and Safety Code Chapter 6.95).

EXISTING CONDITIONS

Facilities

Hazardous materials are concerns for any facility that generates, uses, treats, transports, or disposes of hazardous materials. Facilities that generate waste are classified as Large Quantity, Small Quantity, or Conditionally Exempt Small Quantity Generators under the Resource Conservation and Recovery Act (RCRA). In addition, facilities in certain industries that manufacture, process, or use significant amounts of selected industrial chemicals, are required to report annually on their releases of these chemicals under the Toxic Release Inventory (TRI) program. Facilities that treat, store, or dispose of hazardous wastes are permit-required TSD facilities (Table 7-9). Within California, permitted facilities are subject to a five-tier permitting program managed by DTSC according to category of hazardous waste facility. Like generators and TSD facilities, hazardous waste transporters are regulated under RCRA and other supplemental regulations.

Table 7-9: Facility Permit Type

•		
Facility Category	Permit Type	Description
A Off. in \ \	Full Permit	All facilities requiring a RCRA permit, plus selected non-RCRA activities pursuant to Title 22 California Code of Regulations (22 CCR).
Accept Offsite Waste	Standardized Permit	Any facility that manages waste not regulated under RCRA, but regulated as a hazardous waste by California for example recyclers, oil transfer stations, and precious metals recyclers.
Treating Onsite Generated Waste Only	Permit by Rule	A California-only, non-RCRA onsite treatment permit for wastes generated at the facility where they are treated. This applies to complex waste streams and processes such as concentrated metal wastes, concentrated caustics, and wastes posing multiple hazards.
	Conditional Authorization	A California-only, non-RCRA onsite treatment authorization for moderately complex waste streams such as metal-bearing waters, single hazard wastes, and neutralization.
	Conditional Exemption	A California-only, non-RCRA onsite treatment authorization for small-quantity, basic treatment including oil/water separation, container rinsing or destruction, and gravity settling

The City contains a number of facilities that generate, use, treat, transport, or dispose of hazardous materials, as summarized in Table 7-10. Note that facilities may be listed in multiple categories.

Table 7-10: Generator, TSD, and Transport Facilities in City of Santa Clara

Database	Description	Number of Facilities
Resource Conservation and Recovery Information System (RCRA Info)	Sites that generate, transport, store, treat, and/or dispose of hazardous waste; includes small- and large-quantity operators	101 Large Quantity 344 Small Quantity 14 Transporters 2 TSD Facilities
California DTSC Hazardous Waste (Tanner) Report 2006	Potential hazardous waste generators	433
Toxic Release Inventory (TRIS)	Facilities that report use, manufacture, treat, transport, or release into environment of >650 inventoried toxic chemicals	86 facilities
California State Water Resources Control Board Geotracker	Landfill	2
California DTSC EnviroStor	Permitted Facilities	16 (2 operating/14 nonoperating)

Storage Tanks

Storage tanks containing hazardous materials are a concern both due to the large volume often contained as well as the likelihood of release. State laws govern permitting, monitoring, closure, reporting, and cleanup of facilities with storage tanks. Underground storage tanks are any one or combination of tanks, including pipes and connections, used for the storage of hazardous substances with at least 10 percent of tank and piping volume located below ground surface. Tanks that are substantially or entirely above the ground surface are categorized as aboveground storage tanks (AST). Regulation of both aboveground and underground storage tanks has been delegated primarily to local agencies under the California EPA Certified Unified Program Agency (CUPA) program. AST owner/operators must submit SPCC plans for review and approval by CUPAs. UST owner/operators must be granted an operating permit and maintain a certified Designated UST Operator for inspection and monitoring USTs. As the City's CUPA, Santa Clara Fire Department Hazardous Materials Division ensures permitting, monitoring, and inspection of storage tanks in the City.

Requirements for aboveground tanks have traditionally been substantially less stringent than that required of USTs primarily because of the higher likelihood of release from USTs. However recent California legislation (Aboveground Petroleum Storage Act) to shift regulatory responsibility for selected aboveground tanks to CUPAs and to improve data tracking should improve quantitative estimates of aboveground tanks. Prior to this year, only data on underground storage tanks was consistently reported centrally to the RWQCB and maintained in the Geotracker database application. These tank sites are tracked in GeoTracker as LUFT and UST Permits (Figure 7-5).

Table 7-11: Storage Tank Sites in City of Santa Clara

Database	Description	Number of Sites
California State Water Resources	Leaking Underground Fuel Tanks (LUFT): reported leaking underground fuel storage tanks	54
Control Board Geotracker	Registered Underground Storage Tanks	69

Potential Release Sites to Soil and Groundwater

Sites where historic or ongoing activities have resulted in the known or suspected release of hazardous materials to soil and groundwater are concerns for exposure to humans and potential damage to the environment. These sites are often categorized according to severity with the most complex and severe being managed under the EPA National Priorities List (NPL or Superfund). The California State Water Resources Control Board regulates Spills, Leaks, Investigation, and Cleanups (SLIC) sites which investigates and regulates non-permitted discharges. Release sites may also be State Response where DTSC identifies or confirms a release and is involved in remediation as lead agency or in an oversight capacity. These confirmed release sites are generally high-priority and high potential risk. Other sites that are deemed upon evaluation to be less severe may be managed under the Voluntary Cleanup Program. Note that California does not track Brownfields sites separately and often are listed as Voluntary Cleanup efforts. Release sites, particularly more complex sites such as NPL sites, frequently require substantial long term monitoring prior to final closure or NPL deletion. Active sites may be undergoing only annual monitoring or even ongoing institutional controls (such as deed or use restrictions for example to well installation or prevent groundwater extraction or soil disruption).

A number of sites have been identified within the City of Santa Clara that are at some stage of identification, investigation, remediation, operation, or monitoring. SLIC sites are tracked in GeoTracker, as shown in Figure 7-5. DTSC sites are listed in Table 7-12.

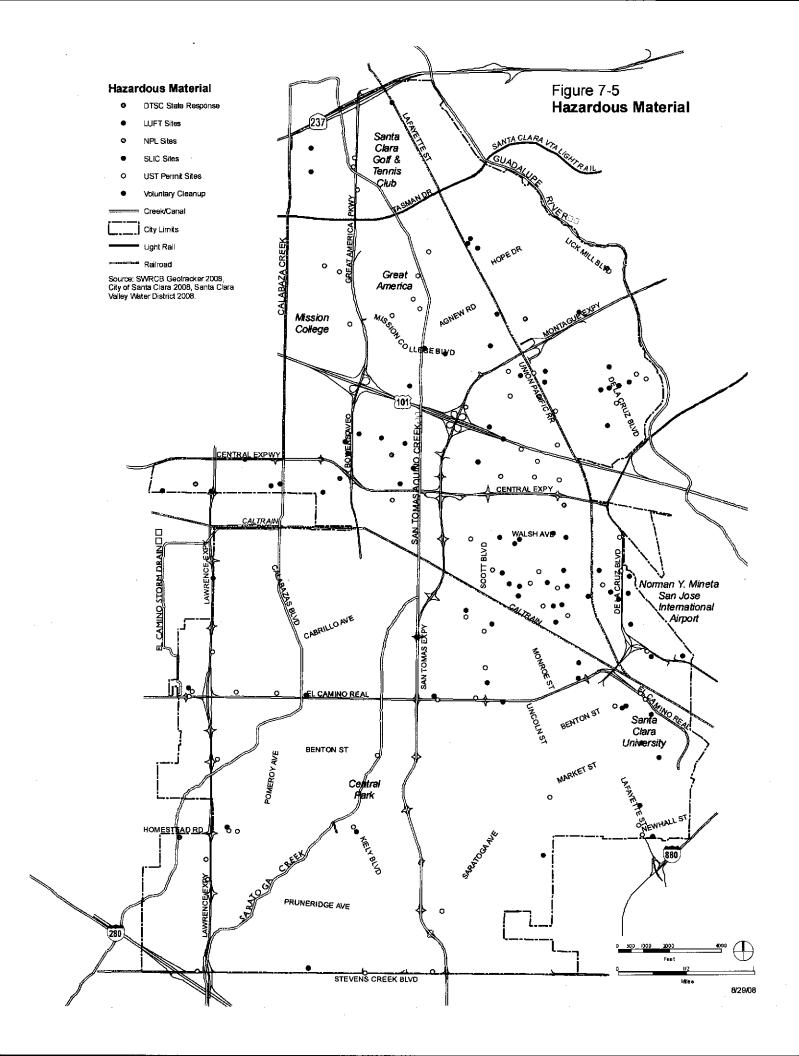
Table 7-12: Hazardous Materials Sites in City of Santa Clara

Database	Description	Number of Sites
CERCLIS /National Priority List Sites (Superfund Sites)	Potentially hazardous waste sites reported to US EPA including active Superfund priority cleanup site and sites proposed for NPL but not listed	5 NPL Sites 8 Not listed
California DTSC Waste Site List EnviroStor	Known and potential hazardous substance release sites	21 Total 5 NPL 6 State Response 10 Voluntary Cleanups
California EPA Hazardous Waste and Substance Site (Cortese) List	Public drinking water wells with detectable levels of contamination; sites selected for remediation; sites with known toxic material; potentially leaking UST sites; solid waste disposal facilities	0
California State Water Resources Control Board Geotracker	Spills, Leaks, Investigations, and Cleanup (SLIC) sites: facilities with reported potential releases	45 (open)

SOURCES

Geology

- California Geological Survey. 2004. Guidelines for evaluating and mitigating seismic hazards in California. (Special Publication 117.) Sacramento, CA: California Geological Survey.
- California Geological Survey. 2008. California Geological Survey-seismic hazards zonation program. Available: http://www.conservation.ca.gov/cgs/shzp/Pages/article10.aspx. Accessed: June 2008.
- County of Santa Clara, 2002a. County of Santa Clara geologic hazard zones—index, compressible soil hazard zones. Available: http://www.sccgov.org/portal/site/planning/planningchp?path=%2Fv7%2FPlanning%2 C%20Office%20of%20%28DEP%29%2FMaps%20%26%20GIS%2FGeologic%20Haza rds%20Zones%28Maps%20%26%20Data%29. Accessed: June 2008.
- County of Santa Clara, 2002b. County of Santa Clara geologic hazard zones—fault rupture hazard zones, Map Sheets 2, 10, 17, 18, 25, 26, 34. Available: http://www.sccgov.org/portal/site/planning/planningchp?path=%2Fv7%2FPlanning%2 C%20Office%20of%20%28DEP%29%2FMaps%20%26%20GIS%2FGeologic%20Haza rds%20Zones%28Maps%20%26%20Data%29. Accessed: June 2008.



- County of Santa Clara, 2006a. County of Santa Clara geologic hazard zones—index, liquefaction hazard zones. Available:
- http://www.sccgov.org/portal/site/planning/planningchp?path=%2Fv7%2FPlanning%2C%20 Office%20of%20%28DEP%29%2FMaps%20%26%20GIS%2FGeologic%20Hazards%20Zones %28Maps%20%26%20Data%29. Accessed: June 2008.
- County of Santa Clara. 2006b. County of Santa Clara geologic hazard zones—index, landslide hazard zones. Available: http://www.sccgov.org/portal/site/planning/planningchp?path=%2Fv7%2FPlanning%2 C%20Office%20of%20%28DEP%29%2FMaps%20%26%20GIS%2FGeologic%20Haza rds%20Zones%28Maps%20%26%20Data%29. Accessed: June 2008.
- Hart, E.W., and W.A. Bryant. 1997. Fault-rupture hazard zones in California: Alquist-Priolo Earthquake Fault Zoning Act with index to earthquake fault zone maps. (Special Publication 42, Interim Revision 2007.) Available: ftp://ftp.consrv.ca.gov/pub/dmg/pubs/sp/Sp42.pdf . Accessed: June 2008.
- International Conference of Building Officials. 1997. Maps of known active near-source zones in California and adjacent portions of Nevada. To be used with the 1997 Uniform Building Code. Prepared by California Department of Conservation, Division of Mines and Geology, in cooperation with Structural Engineers Association of California Seismology Committee. Whittier, CA: International Conference of Building Officials.
- Norris, R. M., and R. W. Webb. 1990. Geology of California (2nd edition). New York, NY: John Wiley & Sons.
- Santa Clara Valley Water District. 2001. Santa Clara Valley Water District groundwater management plan. Available: http://www.valleywater.org/media/pdf/Groundwater%20Management%20Plan.pdf. Accessed: June 2008.
- Stanley, R. G., R. C. Jachens, P. G. Lillis, R. J. McLaughlin, K. A. Kvenvolden, F. D. Hostettler, K. A. McDougall, and L. B. Magoon, 2002. Subsurface and petroleum geology of the southwestern Santa Clara Valley ("Silicon Valley"), California. (Professional Paper 1663.) Washington, DC: U. S. Government Printing Office.
- U.S. Geological Survey Working Group on California Earthquake Probabilities. 2003. Earthquake probabilities in the San Francisco Bay Region: 2002-2031. (Open-File Report 03-214.) Available: http://pubs.usgs.gov/of/2003/of03-214/. Downloaded: September 2006.
- U. S. Soil Conservation Service. 1968. Soils of Santa Clara County. Washington, DC: U.S. Department of Agriculture.
- Wagner, D. L., E. J. Bortugno, and R. D. McJunkin. 1990. Geologic map of the San Francisco-San José Quadrangle, scale 1:250,000. (Regional Geologic Map Series, Map No. 5A.) Sacramento, CA: California Division of Mines and Geology.

Wentworth, C. M., M. C. Blake, Jr., R. J. McLaughlin, and R. W. Graymer, compilers. 1999. Preliminary geologic map of the San José 30 x 60-minute quadrangle. (Open-file report 98-795.) Available: http://pubs.usgs.gov/of/1998/of98-795/. Accessed: June 2008.

Hydrology

Printed References and Websites

- California Department of Water Resources. 2003. California's groundwater. (Bulletin 118.) (October.) Available: http://www.groundwater.water.ca.gov/bulletin118/update2003/index.cfm. Accessed: May-July 2008.
- City of Santa Clara. 2005. Urban water management plan. Santa Clara, CA: City of Santa Clara Water and Sewer Utility.
- San Francisco Bay Regional Water Quality Control Board. 2006. Proposed 2006 CWA Section 303(d) list of water quality limited segments. (October 25.) http://www.waterboards.ca.gov/water_issues/programs/tmdl/docs/303dlists2006/swrcb /r2_final303dlist.pdf. Accessed: July 2008.
- San Francisco Bay Regional Water Quality Control Board. 2007. San Francisco Bay (Region 2) water quality control plan (basin plan). (January 18.) Oakland, CA: California Regional Water Quality Control Board, San Francisco Bay Region. Available: http://www.waterboards.ca.gov/sanfranciscobay/basin_planning.shtml. Accessed: July 2008.
- Santa Clara Basin Watershed Management Initiative. 2001. Watershed characteristics report. Watershed management plan, volume one (unabridged). (February.) San José, CA: Santa Clara Basin Watershed Management Initiative.
- Santa Clara Valley Water District. 2001. Santa Clara Valley Water District groundwater management plan. Available: http://www.valleywater.org/media/pdf/Groundwater%20Management%20Plan.pdf. Accessed: June 2008.
- Santa Clara Valley Water District. 2008. Local water retailers information page. Available: http://www.valleywater.org/Water/Where_Your_Water_Comes_From/Local_Water/W ater_retailers.shtm. Accessed: July 2008.

Personal Communication

DeGroot, Chris. Water Resources Planner, City of Santa Clara Water and Sewer Utility. Telephone conversation with Wendy Luce, ICF International, May 2008.

Biology

California Natural Diversity Database. 2008. RareFind 3, Version 3.1.0 (3 May 2008, update). California Department of Fish and Game, Sacramento, CA.

- California Native Plant Society. 2008. Online inventory of rare and endangered plants. Version 7-08b 4-2-08. Available: http://cnps.web.aplus.net/cgi-bin/inv/inventory.cgi. Accessed: June 12, 2008.
- Leidy, R. A., G. S. Becker, and B. N. Harvey. 2005. Historical distribution and current status of steelhead/rainbow trout (Oncorhynchus mykiss) in streams of the San Francisco Sanctuary, California. Oakland, CA: Center for Ecosystem Restoration and Management.
- Santa Clara Basin Watershed Management Initiative. 2001. Watershed characteristics report. Watershed management plan, volume one (unabridged). (February.) San José, CA: Santa Clara Basin Watershed Management Initiative.
- U.S. Fish and Wildlife Service. 2008. Online search for federally listed, threatend, endangered or candidate species in Santa Clara County. Available online at: http://www.fws.gov/sacramento/es/spp_list.htm. Accessed June 2008.

Energy and Minerals

- California Energy Commission. 2007a. California energy demand 2008–2018, staff revised forecast, staff final report, 2nd edition. (CEC-200-2007-015-SF2.) (November). Available:www.energy.ca.gov/2007publications/CEC-200-2007-015/CEC-200-2007-015-SF2.pdf. Accessed: July 2008.
- California Energy Commission. 2007b. 2007 integrated energy policy report. (CEC-100-2007-008-CMF.) (December.) Available: http://www.energy.ca.gov/2007publications/CEC-100-2007-008/CEC-100-2007-008-CMF.PDF. Accessed: 3 July 2008.
- City of Santa Clara. 2002. General Plan, City of Santa Clara, California, 2000–2010 (July 2002). Available: http://santaclaraca.gov/community/au_gen_plan_index.html. Accessed: July 2008
- Division of Oil, Gas, and Geothermal Resources. 2003. District 3, Map W3-10, August 2003. Available: http://www.conservation.ca.gov/dog/maps/images_maps/PublishingImages/dist3index. jpg. Accessed: 9 July 2008.
- Kohler-Antablin, S. 1996. Update of mineral land classification: aggregate materials in the South San Francisco Bay production-consumption region. (Open-File Report 96-03.) Sacramento, CA: California Department of Mines and Geology.
- Office of Planning and Research. 2003. General plan guidelines. Available: www.opr.ca.gov/planning/publications/General_Plan_Guidelines_2003.pdf. Accessed: 3 July 2008.
- Santa Clara County, 2007. ABAG SCC Projections 2007, Available: http://www.sccgov.org/SCC/docs/Planning, Office of (DEP)/attachments/Facts and Figures/ABAG Projections 2007 Santa Clara County Unincorporated and Countywide.xls. Accessed: 15 July 2008.

Stanley, R. G., R. C. Jachens, P. G. Lillis, R. J. McLaughlin, K. A. Kvenvolden, F. D. Hostettler, K. A. McDougall, and L. B. Magoon. 2002. Subsurface and petroleum geology of the southwestern Santa Clara Valley ("Silicon Valley"), California. (Professional Paper 1663.) Reston, VA: U.S. Geological Survey. Available: geopubs.wr.usgs.gov/profpaper/pp1663. Accessed: 9 July 2008.

Hazardous Materials

- California Department of Toxic Substances and Control. 2008. Envirostor database and website. Available: http://www.envirostor.dtsc.ca.gov/public/. Accessed: June 2008.
- California Department of Toxic Substances and Control. 2008. "Tanner Report." Available: http://www.dtsc.ca.gov/HazardousWaste/HW_Summary/index.cfm. Accessed: June 2008.
- California Department of Toxic Substances and Control. 2008. "Cortese List" database and website. Available: http://www.dtsc.ca.gov/SiteCleanup/Cortese List.cfm. Accessed: June 2008.
- California Environmental Protection Agency. 2008. "Cortese List" database and website. Available: http://www.calepa.ca.gov/SiteCleanup/CorteseList/default.htm. Accessed: June 2008.
- U.S. Environmental Protection Agency. 2008a. EPA Envirofacts database and website. Available: www.epa.gov/enviro/. Accessed: June 2008.
- U.S. Environmental Protection Agency. 2008b. EPA CERCLIS database and website. Available: www.epa.gov/enviro/html/cerclis/cerclis_query.html. Accessed: June 2008.
- U.S. Environmental Protection Agency. 2008c. Toxics release inventory (TRI). Available: www.epa.gov/tri/tridata/tri06/index.htm. Accessed: June 2008.
- U.S. Environmental Protection Agency. 2008d. RCRAInfo database and website. Available: http://www.epa.gov/enviro/html/rcris/rcris_query_java.html. Accessed: June 2008.
- State Water Resources Control Board. 2008. Geotracker database and website. Available: http://geotracker.swrcb.ca.gov/. Accessed: June 2008.



Noise

This chapter assesses the existing noise conditions in the City of Santa Clara. The regulatory environment and existing conditions are identified and analyzed to determine associated constraints and opportunities. The purpose of this analysis is to provide information to use as a resource for updating the General Plan for the City of Santa Clara. For a glossary of terminology, see Appendix A.

8.1 REGULATORY ENVIRONMENT

The City of Santa Clara is subject to various federal, State, and local laws, regulations, and polices. The extent to which these apply depend on the type of project being evaluated. For example, Federal Highway Administration (FHWA) noise regulations and standards only apply to roadway projects in the City that use federal funding. The following is a list of laws, regulations, policies, or agencies with noise standards that may apply to the City.

- Noise Control Act of 1972
- United States Environmental Policy Act (USEPA)
- U.S. Department of Housing and Urban Development (HUD)
- Federal Aviation Administration (FAA)
- Federal Highway Administration (FHWA)
- Federal Transit Administration (FTA)
- State of California General Plan Guidelines
- California Noise Insulation Standards
- Division of Aeronautics Noise Standards
- CEQA, Public Resources Code §21000 et seq.
- City of Santa Clara General Plan
- City of Santa Clara Municipal Code

IMPLICATIONS FOR LAND USE

Existing regulations that apply to noise, such as maximum allowable exposure limits and land use compatibility standards, have the potential to constrain the distribution of new land uses associated with the City's General Plan Update.

The Environmental Protection Act (EPA), Department of Housing and Urban Development (HUD), and the State of California General Plan Guidelines establish indoor and outdoor noise limits to protect public health and welfare. These may constrain the implementation of new land use designations since noise-sensitive uses, such as residences and schools, must be sited in areas where ambient noise levels will not exceed recommended limits. In addition, new land uses that produce noise are limited to areas where they will not affect sensitive users. Implementing new land uses provides an opportunity to enhance regulatory requirements associated with noise. In addition, new policies can be crafted to align with regulatory requirements in order to meet acceptable noise standards.

Since most regulatory requirements deal with achieving acceptable noise standards for noise-sensitive uses, new land use policies present an opportunity to encourage the siting of uses to meet noise standards. Since Santa Clara is nearly built-out, the City's opportunity to address noise issues is minimal. When residential structures or other uses cannot be placed away from a noise-emitting source, they can, however, be required to have higher levels of insulation as indicated by California Noise Insulation Standards (Title 24). Compliance with Title 24 may require some architectural and mechanical improvements, such as the use of air conditioning and/or mechanical ventilation systems, double paned glass, solid core exterior doors, or approved door and window frames and seals.

Additional measures to reduce noise impacts can include implementing design solutions for new structures, or modifications to existing structures, that buffer noise-sensitive land uses from noise sources.

8.2 EXISTING CONDITIONS

NOISE-SENSITIVE AREAS IN THE CITY

Noise-sensitive land uses are generally either residential or uses that could be adversely affected by noise. The potential for noise conflict is greatest where a noise generating source is located in proximity to a noise-sensitive use.

The primary noise-sensitive locations in the City with the potential for noise conflict include:

The former Agnews area (Rivermark) that is near the Norman Y. Mineta International Airbort;

Residential developments along railroad lines as well as Lawrence and San Tomas Expressways;

The Mission College area; and

Residential uses adjacent to industrial uses.

EXISTING AMBIENT NOISE CONDITIONS

Noise Environment

Noise amplitude and attenuation characteristics are key factors in the establishment of noise conditions, and vary considerably according to natural climate and topographical features. Meteorological factors affecting noise characteristics within Santa Clara include temperature changes, wind, and amounts and durations of rainfall. Built features, such as buildings, roadways, and structures, also affect noise amplitude and attenuation.

Noise Monitoring Survey

A noise monitoring survey was performed from July 15th to 17th, 2008, to establish baseline noise conditions and identify noise-sensitive receptors in the vicinity of major noise sources in the City. Two long-term (24-hour+) and six short-term (ten-minute) measurements were conducted (Figure 8-1). Sound level measurements were conducted using Larson Davis Model 720 and 812 Sound Level Meters, set to slow time response and using A-Weighting (dBA).

Long-term measurement LT-1 was located about 25 feet from the rail line that parallels Lafayette Street and about 85 feet from the center of Lafayette Street (across Bassett Street from the residence at 4430 Bassett Street). Although the monitoring location was unshielded from the rail or Lafayette Street, an eight-foot soundwall shields residences located to the north of the measurement site. Background noise levels at this location were generated primarily by traffic on Lafayette Street. Airplanes and trains also generate intermittent high noise levels. Maximum noise levels generated during train passbys typically ranged from 85 to 95 dBA L_{max}. Aircraft generated maximum noise levels in the range of 75 to 85 dBA L_{max}. Train and aircraft operations ceased between the hours of 1:00 and 6:00 a.m. A 24-hour average noise level of 76 to 77 dBA CNEL was calculated at this location. The hourly trend in noise levels at LT-1 is displayed graphically in Figure 8-2.

Measurement location LT-2 was situated behind the residence located at 2135 Main Street, about 60 feet from the closest of the two Union Pacific Rail tracks. A six-foot-high fence is located between the railroad and the residences at this location; however, the fence is in poor condition with numerous gaps and holes. The microphone was located in a hole in the fence and was essentially unshielded from the railroad. Background noise levels at this location were below 55 dBA, with intermittent high maximum noise levels generated by trains. Maximum noise levels generated during train passbys typically ranged from 75 to 85 dBA L_{max} . Train operations ceased between the hours of 1:30 and 4:30 am. A 24-hour average noise level of 69 dBA CNEL was calculated at this location. The hourly trend in noise levels at LT-2 is displayed graphically in Figure 8-3.

The six attended short-term measurements were conducted at locations representative of noise-sensitive receptors adjacent to major noise sources throughout the City, including the De La Cruz and Vallco industrial areas, Lawrence Expressway, San Tomas Expressway, Homestead Road, and Saratoga Avenue. Measurements were conducted at a height of five feet above the surrounding ground. Meteorological conditions during the short-term measurements consisted of clear to partly cloudy skies with temperatures ranging from 75 to 85°F and winds speeds from 0 to 4 mph. The results of the sound level measurements are summarized in Table 8-1.

Table 8-1: Short-Term Noise Measurement Results

		Measurement Results, dBA			ВА	
Site	Location	Leq	Lio	L _{so}	L ₉₀	Primary Noise Source
ST-I	Front of 840 Keith Lane (07/15/08, 11:16-11:26)	66	68	52	46	Maximum levels from Aircraft, train horn, industrial noise from De La Cruz ~45 dBA
ST-2	Setback of 2382 Warburton Ave, behind 6 foot soundwall (07/15/08, 12:53-13:03)	59	62	58	52	Traffic on San Tomas Express- way
ST-4	Setback of 500 Saratoga Avenue (07/15/08, 13:43-13:53)	62	65	57	47	Traffic on Saratoga Ave
ST-5	Setback of 259 La Herran Drive (07/15/08, 14:14-14:24)	49	50	48	46	Ambient noise only, Vallco Park industrial uses not audible
ST-6	Setback of 3130 Homes- tead Road (07/15/08, 14:36-14:46)	63	67	61	48	Traffic on Homestead Road
ST-7	Backyard of 2116 Del Monte Avenue, behind 6 foot soundwall (07/15/08, 15:03-15:13)	64	67	63	53	Traffic on Lawrence Expressway

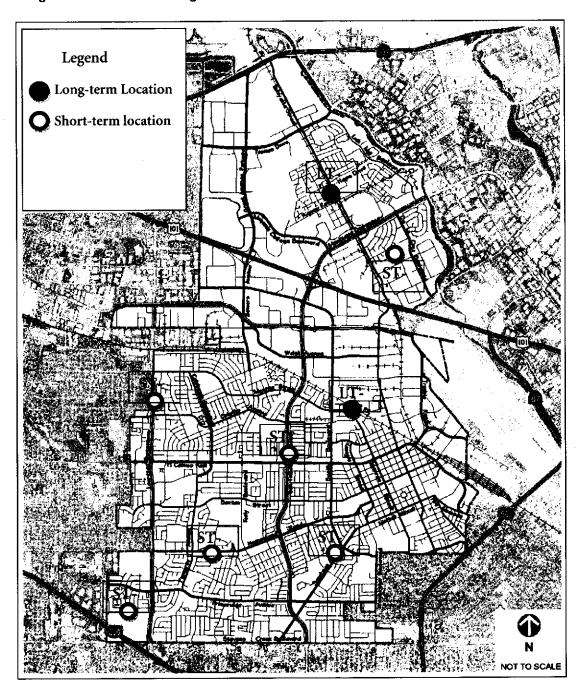


Figure 8-1: Noise Monitoring Locations

Figure 8-2: Daily Trend in Noise Levels at Location LT-I

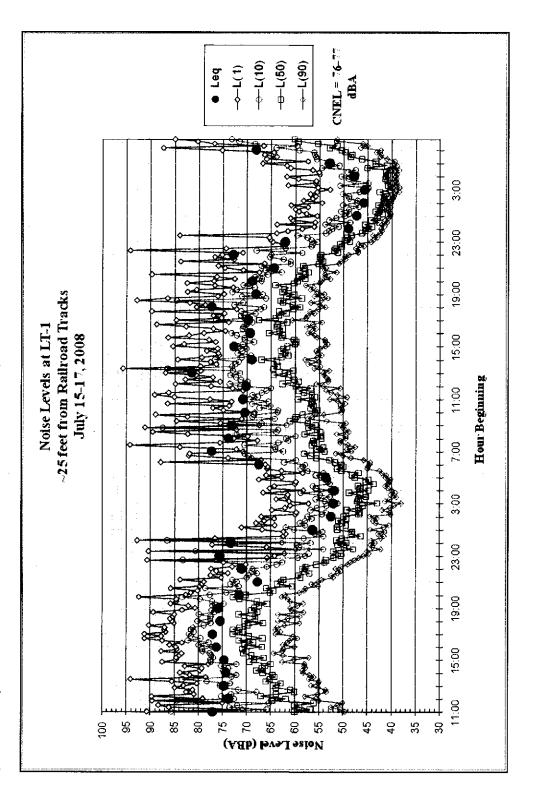
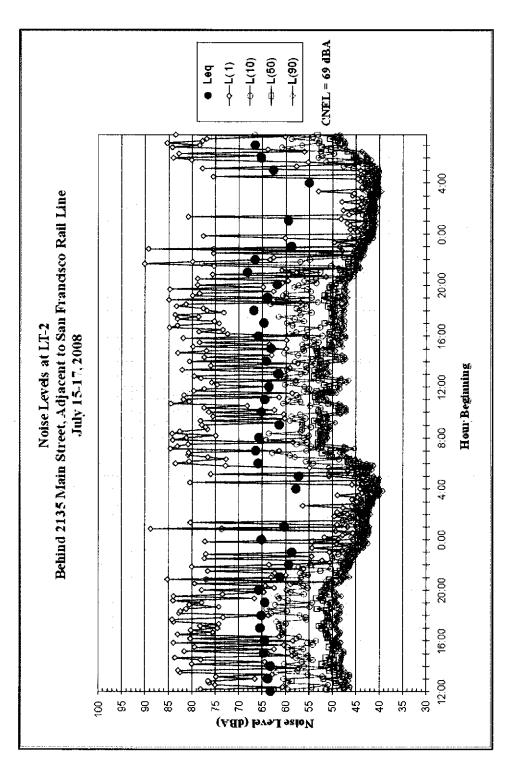


Figure 8-3: Daily Trend in Noise Levels at Location LT-2



MAJOR NOISE SOURCES

The most widespread and continual sources of noise in Santa Clara are the transportation facilities, including vehicular traffic, railroads, and Norman Y. Mineta International Airport. Industrial facilities also include some sources of noise that could be annoying to nearby noise-sensitive uses.

Vehicular Traffic

Roadway traffic is one of the more prevalent sources of noise within the City of Santa Clara. Traffic noise varies in how it affects land uses depending upon the type of roadway, distance of the land use from that roadway, topographical setting, and other physical land features such as landscaping, walls, buildings, and other structures. Some variables that affect the amount of noise emitted from a road are speed of traffic, flow of traffic, and type of traffic (e.g. cars versus heavy duty trucks). Another variable affecting the overall measure of noise is a perceived increase in sensitivity to vehicular noise at night. Because of the high traffic volumes for the freeways and expressways in the area, U.S. 101, Central Expressway, Lawrence Expressway, San Tomas Expressway, and Montague Expressway constitute the loudest roadway source noise in the City. Industrial and commercial uses are located primarily along U.S. 101 and Central Expressway; however, there are residences located along the Lawrence, San Tomas, and Montague Expressways. Noise from arterial roadways is also a contributor to the noise environment.

Traffic noise levels on the Santa Clara roadway network were calculated based on traffic noise modeling using the FHWA Traffic Noise Model (TNM) look up tables. Calculations were based on ADT traffic volumes counts and speeds supplied by Fehr & Peers Transportation Consultants. Table 8-2 shows a summary of the existing CNEL traffic noise levels along major City roadways at a distance of 100 feet from the centerline of the roadway and a summary of the calculated distances from the centerline to the 60, 65, and 70 dBA CNEL contours (as measured from the center of the roadway). Noise levels assume traffic along the roadway is the primary noise source and do not take shielding by terrain or structures into account. Calculations assume an acoustically hard ground surface.

Airports

The Norman Y. Mineta International Airport is located to the east of, and adjacent to, the City of Santa Clara. Noise generated by aircraft using the Norman Y. Mineta International Airport affects Santa Clara residents in the area north of the U.S. 101. The City of Santa Clara uses the official Santa Clara County ALUC Referral Boundary (65 dB CNEL) Map as a basis of referring proposed projects to the Airport Land Use Commission. Based on the noise monitoring survey, aircraft generate maximum noise levels in the range of 75 to 78 dBA L_{max} at residences in the area north of the U.S. 101. Figure 8-4 shows the 65 dB CNEL contour map for Year 2010, from the 1992 Land Use Plan.

Table 8-2: Existing Vehicular Traffic Noise Levels for Major Roadways in Santa Clara

		Total Daily	7	CNEL, dBA	Distance to	Distance to CNEL Contour, ft1	和
Roadway	Segment	Traffic Vo- lumes	(mph)	(100 feet from the Centerline)	70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
Lawrence Expressway	north of Stevens Creek Blvd	62,894	20	75	290	920	2,910
Lawrence Expressway	north of El Camino Real	63,484	20	75	290	930	2,930
Lawrence Expressway	on Caltrain overpass	096'29	20	75	310	066	3,140
Lawrence Expressway	north of Oakmead Pkwy	79,002	20	76	370	1,150	3,650
Kiely Boulevard	north of Stevens Creek Blvd	14,214	35	63	_	_	210
Bowers Avenue	north of El Camino Real	13,441	35	63	_	_	180
Bowers Avenue	on Caltrain underpass	18,163	\$	65	_	0	350
Bowers Avenue	north of Augustine Drive	38,360	9	69	2	230	740
Great America Parkway	north of Mission College Blvd	36,587	4	89	20	220	710
Great America Parkway	north of Tasman Drive	23,809	4	67	20	120	460
Saratoga Avenue	north of Stevens Creek Blvd	22,463	9	99	_	40	430
San Tomas Expressway	north of Stevens Creek Blvd	36,100	45	71	120	390	1,240
San Tomas Expressway	north of El Camino Real	46944	45	72	091	510	1,620
San Tomas Expressway	north of Scott Blvd	66,490	45	74	230	720	2,290
Montague Expressway	east of Mission College Blvd	58,070	45	73	200	630	2,000
Montague Expressway	east of Lick Mill Blvd	52,662	45	73	081	570	018,1
Winchester Boulevard	north of Stevens Creek Blvd	20,547	35	49	_	%	280
Winchester Boulevard	north of Pruneridge Ave	11,257	35	62	_	20	150
Bascom Avenue	south of Newhall St	26,854	30	64	_	08	260
Stevens Creek Boulevard	west of Woodhams Rd	24,937	9	29	20	150	480
Pruneridge Avenue	west of Woodhams Rd	11,145	35	62	_	20	150
Homestead Road	east of Pomeroy Ave	20,614	4	99	_	130	400
The Alameda	east of El Camino Real	31,140	35	29	_	140	450

440	910	009	1,850	750	991	009	340	09	8	061	150	250	310	340	420	360	350	150	%	9
140	091	8	280	240	20	061	011	20	_	09	20	8	8	01	130	0	0	20	_	-
-	20	9	180	88	_	09	-	-	-	-	_	_	_	-	_	-	_	-	-	_
99	29	89	73	69	62	89	65	. 29	59	63	62	2	65	65	99	99	92	62	09	0
35	4	4	20	35	35	4	40	35	30	35	4	9	4	4	4	4	40	35	30	7
32798	26,256	31,235	39,959	55,978	116,11	31,065	17,737	12,099	8,611	13,194	7,769	12,790	16,265	17,602	21,584	18,369	18,189	11,175	9,247	702 7
East of Pomeroy Ave	east of Scott Blvd	east of Brokaw Rd	east of Corvin Dr	north of Central Exp	south of Aldo Ave	east of De La Cruz Blvd	north of El Camino Real	east of Oakmead Pkwy	north of El Camino Real	west of Calabazas Blvd	west of Mission College Loop	west of Patrick Henry Dr	west of Centennial Blvd	east of Lick Mill Blvd	north of El Camino Real	north of Agnew Rd	at the US 101 overcrossing	east of Corvin Dr	east of Pomeroy Ave	south of Newball Ct
El Camino Real	El Camino Real	Coleman Avenue	Central Expressway	De La Cruz Boulevard	De La Cruz Boulevard	Trimble Road	Scott Boulevard	Scott Boulevard	Monroe Street	Monroe Street	Mission College Boulevard	Tasman Drive	Tasman Drive	Tasman Drive	Lafayette Boulevard	Lafayette Boulevard	Lafayette Boulevard	Walsh Avenue	Benton Street	Park Avenue

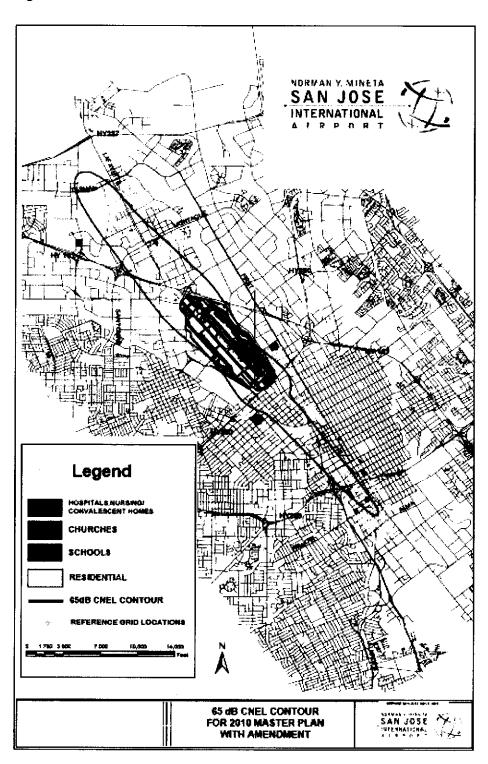


Figure 8-4: 65 dB CNEL Noise Contours for Year 2010

Railroads

Two Union Pacific Transportation Company rail lines run through the City of Santa Clara. The San Francisco line bisects the City in a generally east-west direction and forms a boundary between residential uses to the south and industrial uses to the north. The other rail line parallels Lafayette Street from the northern portion of the City from where it crosses under the U.S. 101. Operations on these lines include both passenger and freight service, with spur tracks in industrial areas. Based on noise monitoring of existing operations, the San Francisco rail line generates a noise level of about 65 dBA CNEL at a distance of 100 feet and the Lafayette Street rail line generates a noise level of about 64 dBA CNEL at a distance of 100 feet.

Industry

Industrial and manufacturing facilities within the City involve moving and stationary noise sources that may affect adjacent noise-sensitive land uses. Industrial processes such as fabricating and grinding have the potential to exert a relatively high level of noise impact within their immediate operating environments. In addition, activities such as truck movements and deliveries could generate noise along the local roadway network. The scope and degree of noise impacts generated by industrial uses is dependent upon various critical factors, including the type of industrial activity, hours of operation, and the site's location relative to other land uses. One of Santa Clara's General Plan goals has been the separation of industrial and residential land uses. However, residential land uses are immediately adjacent to industrial land uses in southwest corner of the City around Vallco Park and north of Bayshore around the De La Cruz industrial area. During the noise monitoring survey, industrial uses in the De La Cruz area generated a constant noise level of about 45 dBA at adjacent residences. Vallco Park uses were not audible at the noise monitoring location. Noisy activities could take place at other times of the day or year that were not accounted for in the noise monitoring survey.

Other Noise Sources

Other sources of noise include noise from commercial, recreational, and school uses. Noise sources associated with commercial uses include mechanical equipment, as well as activities associated with parking lots, loading docks, and drive thrus. Noise generating activities associated with schools include children at play, bells, and public address systems. High schools may include stadiums for day and evening athletic events, and public address/loudspeaker systems.

Intermittent or temporary noise sources include construction and landscaping maintenance activities. Although these noise sources are typically short in duration, they are often loud and can be major sources of annoyance.

IMPLICATIONS FOR LAND USE

Existing noise conditions within Santa Clara have the potential to constrain the implementation of new land uses within the City. The following discussion explains the existing conditions and their potential implications for implementing new land uses.

Major transportation corridors, including U.S. 101, Central Expressway, Lawrence Expressway, San Tomas Expressway, and Montague Expressway constitute the loudest roadway noise sources in the City. Land uses along U.S. 101 and Central Expressway consist primarily of

industrial and commercial uses. Noise-sensitive residential uses are located along the Lawrence, San Tomas, and Montague Expressways. Soundwalls have been constructed along portions of these roadways in areas where residences predominate. However, soundwalls do not always reduce noise levels to meet Santa Clara's standards. Because it may be infeasible to increase the heights of some sound walls or to implement other noise reduction measures,, increased noise caused by land use changes may be problematic.

Noise generated by aircraft using the Norman Y. Mineta International Airport affects Santa Clara residents in the area north of the U.S. 101. The Santa Clara County Airport Land Use Commission, therefore, restricts significant new residential development. Two Union Pacific Transportation Company rail lines run through the City of Santa Clara, with residences located adjacent to portions of both rail lines. Soundwalls have been constructed along portions of the rail lines in areas where residences predominate, such as north of Hope Drive. In areas without soundwalls, noise levels at adjacent residences can pose constraints.

In Santa Clara, industrial and residential land uses are typically separated. However, residential land uses are immediately adjacent to industrial land uses in southwest corner of the City near Vallco Park and north of Bayshore near the De La Cruz industrial area. Intensifying these industrial uses could necessitate additional sound control measures to protect nearby residences.

Development pursuant to new or revised land use policies, land use designations, and projected population increases could result in an increase in dwelling units and employment centers. This new development would generate additional traffic that could increase noise levels along the City's transportation corridors. New land uses, especially those considered sensitive to noise, could be exposed to unacceptable noise levels if located near noise-emitting sources. Particular problems could arise in cases where noise-producing uses are located immediately adjacent to sensitive uses. Mixed-use projects also present challenges. In addition, construction-related activities generate short-term noise sources that could affect occupants of neighboring uses.

SOURCES

General Plan 2000 - 2010, Chapter 5 - Environmental Quality Element, Noise, City of Santa Clara, California, July 23, 2002.

Fehr & Peers. City of Santa Clara General Plan Traffic Study. July 2008.

Land Use Plan for Areas Surrounding Santa Clara County Airports, Airport Land Use Commission (ALUC), adopted September 1992.

Sustainability

DEFINITION OF SUSTAINABILITY

Though competing definitions abound, one of the most commonly accepted definitions describes sustainable development as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs," From a natural resources perspective, sustainability is commonly described in terms of carrying capacity, such that achieving sustainability becomes a function of "improving the quality of human life while living within the carrying capacity of supporting eco-systems."

Yet another definition partitions sustainability into three spheres of influence: ecology, economy, and equity. Some people like to visualize these components as the three legs of a stool representing sustainable development; without all three legs supporting the stool, it cannot stand. Using another popular term coined by John Elkington in 1994, the World Business Council on Sustainable Development has stated that "companies aiming for sustainability need to perform not against a single, financial bottom line but against the triple bottom line... the simultaneous pursuit of economic prosperity, environmental quality and social equity." Other popular terms used to convey the balancing act of sustainable development include carbon neutrality or zero net impact, both of which refer to the proposition that future development should not simply draw on existing energy and natural resources, but rather should balance resources used with resources created.

The evolution of sustainability concepts beyond the strictly environmental definition reflects a growing body of evidence that communities across the globe face different ecological, economic and social challenges; and for some communities, solving the economic and social challenges is a precondition for addressing the ecological ones.

ECOLOGY

Ecology, or environmental conservation, is the "E" that most people think of when they hear the term sustainability. It is the branch of sustainable development that concerns itself with natural systems and natural resources; it proposes that human activity is sustainable when it does not disrupt the ability of natural (living and non-living) systems to function. The

¹ World Commission on Environment and Development, Our Common Future, Oxford, Great Britain: Oxford University Press, 1987. This document is frequently referred to as the Brundtland report after Gro Harlem Brundtland, Chairman of the Commission.

² The World Conservation Union, the United Nations Environment Programme, and the World Wide Fund for Nature, Caring for the Earth: A Strategy for Sustainable Living, Gland, Switzerland: 1991.

³ Sustainable Measures, http://www.sustainablemeasures.com.

ecological perspective is historically famous for its concern about endangered species and habitats, contamination of water bodies and other forms of pollution, the destruction of non-renewable resources, and a generalized environmental conservation approach. The ecological or environmental approach to sustainability attempts to monitor, protect, and re-establish the physical health of the natural environment. The ecological aspect of sustainability has evolved, however, to encompass an understanding that protecting these "natural environment" systems often has social or "human" costs and implications.

ECONOMY

Economics became a concern to environmentalists when efforts to preserve habitats and natural resources throughout the world confronted the competing priorities of people who needed those same resources to survive. The economic component of sustainability is also used to convince businesses to change harmful practices. Though the phrase and concept of triple bottom line first evolved as an approach to business management, the concern for economics was never simply about the financial profit of an individual organization. Rather, sustainability requires economics to encompass the ability of an organization, community, government, or investment to improve economic stability and vitality on a local, regional, and even national scale.

EQUITY

The equity element of sustainability typically refers to the distribution of costs and benefits across all members of society. There is both a fundamental human rights argument for equity in development—one that distinguishes equity goals from other economic or environmental optimization prerogatives—as well as a procedural argument that claims that true sustainable development cannot be achieved without the participation of all segments of society and the equitable distribution of benefits and opportunities. Commonly-used terms are social justice or environmental justice, names for movements seeking to prevent gentrification, displacement of low-income communities, or the unequal negative public health impact of development decisions. Often equity conflicts are the result of a "Not in My Back Yard" (NIMBY) perspective coupled with the generally low political participation of lower-income or minority communities.

GLOBAL CLIMATE CHANGE

Intimately related to the larger concept of sustainability, global climate change (GCC) is currently one of the most important and widely debated scientific, economic, and political issues in the United States. GCC is a change in the average weather of the earth that may be measured by wind patterns, storms, precipitation, and temperature. The baseline by which these changes are measured originates in historical records identifying temperature changes that have occurred in the distant past, such as during previous ice ages.

Although GCC is widely accepted as a concept, the extent of the change or the exact contribution from human sources remains in debate. Furthermore, the connection between local land use decisions and GCC is poorly understood and therefore is not yet reflected in climate modeling. The United Nations Intergovernmental Panel on Climate Change (IPCC) predicts that global mean temperature change from 1990-2100, given six scenarios, could range from 2.0 to 4.5 degrees Celsius (IPCC, 2001). Regardless of methodology, global average temperature and mean sea level are expected to rise under all six scenarios (IPCC, 2001).

Accelerating GCC has the potential to cause a number of adverse impacts in California, including but not limited to: a shrinking Sierra snowpack; public health threats caused by higher temperatures and more smog; damage to agriculture due to reduced water storage capacity, rising temperatures, increasing salt water intrusion, flooding, and pest infestations; critical habitat modification and destruction; eroding coastlines; increased wildfire risk; and increased electricity demand.

GREENHOUSE GASES

Gases that trap heat in the Earth's atmosphere are called greenhouse gases (GHGs), and contribute to GCC. These gases play a critical role in determining the Earth's surface temperature. Part of the solar radiation that enters Earth's atmosphere from space is absorbed by the Earth's surface. The Earth reflects this radiation back toward space, but GHGs absorb some of the radiation. As a result, radiation that otherwise would have escaped back into space is retained, resulting in a warming of the atmosphere. Without natural GHGs, the Earth's surface would be about 61°F cooler (CCAT, 2006). This phenomenon is known as the greenhouse effect. However, many scientists believe that emissions from human activities, such as electricity generation and vehicles, have elevated the concentration of these GHGs in the atmosphere beyond naturally-occurring concentrations.

9.2 SUSTAINABILITY IN SANTA CLARA

For over thirty years, the City of Santa Clara has been a leader in sustainable innovation that extends from solar energy and recycled water systems to rebates and incentives for energy efficiency and green building. The City has demonstrated a commitment to improving and expanding the City's overall sustainability through several initiatives and efforts. Key areas that the City has focused upon include:

Regional Collaboration. The City has committed to several regional efforts that outline sustainable goals for conservation of energy resources and greenhouse gas reductions. In January of 2008, the City signed the U.S. Mayors Climate Protection Agreement: The target is to meet or exceed the Kyoto Protocol; a reduction of greenhouse gas emissions to be 5.2 percent below the 1990 levels by 2012, representing a 29 percent cut. Additionally, Santa Clara is a member of Sustainable Silicon Valley, a coalition of businesses, governments, and nongovernment organizations working to reduce regional carbon dioxide emissions to 20 percent below 1990 levels by 2010.

Energy Use and Production. The City is well-established in sustainable efforts through its utilities and public services. These include the City's municipal electric utility-Silicon Valley Power (SVP)—which was created in 1896. Today, SVP and the City are focused on expanding the utility's sustainable resources—one of the City's 2007-2009 Principles and Priorities affirms a commitment to reduction of greenhouse gases and development of sustainable renewable energy green power resources. In 2007, 30 percent of the power mix for SVP was from renewable geothermal, small hydroelectric, solar and wind sources (57% including large hydroelectric sources). From these sources, SVP offers a Green Power option to all residents and businesses in the City that is comprised of 100 percent clean wind and solar power resources in California, several of which are solar facilities within the City itself. SVP and the City have also begun to address greenhouse gases, and have formally tracked the City's output since 2005, when SVP attained third-party certification from the California Climate Action Registry. A model for community-wide and City of Santa Clara operations is currently under development, and is forecasted for completion by mid 2008.

Water Conservation. Santa Clara is also involved with water resources and recycling, through co-ownership of the San José/Santa Clara Water Pollution Control Plant, which treats waste water from sinks, tubs, toilets, and industrial processes. The Plant is on track to be energy self-sufficient in five years and carbon neutral in 20 years. The master plan is also looking at revenue strategies that could offset projected sewer rate increases, how to address rising sea levels and flood control, and how to increase recycled water usage. Recycled water usage in the City is already well-established through an extensive recycled water program. The program currently delivers more than one billion gallons of recycled water throughout the City for parks, landscaping, public services, and businesses (including Intel, Sun Microsystems, California Paperboard, Great America Theme Park, and the San Francisco 49ers training facility).

Recycling. Recycling efforts in the City include a curbside recycling program which collects recyclable materials and yard clippings. The resulting collection diverts over 50 percent of the City's waste from the landfill.

Open Space and Vegetation. The City has made several efforts towards open space preservation and provision: recent efforts include the new Ulistac Natural Area and the 12-mile San Tomas Aquino/Saratoga Creek Trail system that will extend from the San Francisco Bay into San José. Additionally, the City has maintained a large network of parks that are well-distributed throughout the majority of the City's residential core; as well as a strong tree program that has gained the City status as a Tree City U.S.A. for the past 20 consecutive years. Future need for open space, however, will be in higher demand, as new development in the City occurs, thus producing a greater residential population and demand for services.

Transit-oriented and Walkable Development. Santa Clara, given its built out nature, is in many ways already practicing local sustainable development through effective use of its limited resources. Recent development in the City illustrates the need to maximize use of available land within the City. Housing has been approved near key corridors and walkable centers like the Lawrence/El Camino Real intersection and Rivermark. This promotes a lower vehicle trip rate and reduced traffic impacts based on the reduced need for internal vehicle trips within the City, as well as increased transit use. Additionally, the Station Area Plan, comprised of about 250 acres around the Santa Clara Transit Center could provide over 1,600 new housing units within a half-mile walking distance from the Transit Center. As other new development is planned in the City, there are opportunities to locate housing and jobs in proximity to transit and to improve and expand transit services along designated corridors.

¹ These solar sources include the Haman Elementary School, STG Machine Solar, and Valley Village Retirement Community. A new photovoltaic system is also planned in the City over an existing City-owned public parking area at the Great America Train Station and will provide energy generation for the Santa Clara electric system.

CURRENT POLICIES AND PROGRAMS

The City has developed several programs and policies that work in tandem with its current efforts toward sustainability. Many of these programs are operated by the City's utilities and include:

- Neighborhood Solar Program. SVP matches resident and business contributions to the fund for non-profit solar facilities in the City, Additionally, SVP provides rebates for local businesses and residents for installation of solar electric systems.
- Silicon Valley's Green Power Program. This Green Power option allows both residents and businesses to pay slightly higher rates to buy power from 100 percent renewable energy sources.
- Rebates. Rebates are offered by the City for a variety of energy-efficient appliances, insulation, lighting, cooling and process efficiency changes.
- OPUS (Optimal Power Use Services). OPUS is offered to SVP business customers and provides assistance for analysis and implementation plans to reduce energy consumption.

In addition to programs developed by the City, the City Council has adopted several policies and action items over the past few years that implement sustainable goals. In 2008, the City adopted Green Building Policies, that recognize and adopt the Leadership in Energy and Environmental Design (LEED) rating system and the GreenPoint residential rating system of Build it Green. These policies require the submittal of a completed LEED or Green Point checklist as part of a planning application, although applicants are not required to adopt green building practices. New City construction and renovation projects over 5,000 square feet are, however, required to achieve a LEED Silver Certification level or better and to recycle at least 50 percent of materials.

Other recent action items identified by the City Council address the establishment of sustainable measures and benchmarks. These include reducing CO, emissions from City Hall buildings by 10 percent by 2010, holding fleet vehicle fuel use steady through 2010, and increasing the number of high efficiency City vehicles. Currently 69 percent of the City's fleet of non-public safety vehicles is comprised of alternative fuel/hybrid vehicles. The City Council also identified the need to continue encouraging recycling by residents and businesses, and expanding recycling at City facilities and special events. Recently, Santa Clara added curbside residential battery collection to its recycling program. Renewable energy was also an important component of the City Council's sustainable action items, whereby the City will seek additional ways to expand renewable energy, such as the installation of photovoltaic systems on Cityowned land in order to provide renewable energy directly into the electric system.

SANTA CLARA GENERAL PLAN AND ZONING UPDATE

This page intentionally left blank

Appendix A: Environmental **Terminology**

Active: As defined by the State of California, describes a fault that shows evidence of surface displacement during Holocene time (approximately the last 11,000 years). California's Alquist-Priolo Earthquake Fault Zoning Act requires the state to identify the state's active faults and strictly regulates residential construction along them.

Aggregate: In construction, refers to sand, gravel, or crushed rock used as an admixture in concrete or asphalt, or used alone as fill or railroad ballast.

Alluvial: Deposited by water, in a stream or mountain-front setting.

Alluvial fan: The fan- or cone-shaped deposit of alluvium formed where a mountain stream empties onto the valley floor.

Alluvium: Sediment transported and deposited by water (for instance, in a river or on an alluvial fan).

Ambient noise level: The composite of noise from all sources near and far. In this context, the ambient noise level constitutes the normal level of environmental noise at a given location.

Aquifer: Underground layer of permeable rock or unconsolidated material from which water can be withdrawn through wells.

Basin: A smaller drainage subarea within a watershed.

Bedrock: Consolidated rock that underlies loose, unconsolidated material (sediment and/or soil).

Brownfields: Brownfields are real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance or waste, pollutant, or contaminant.

Calcareous: Containing calcium carbonate.

Certified Unified Program Agency (CUPA): An agency certified by DTSC to conduct the Unified Program, which consists of hazardous waste generator and onsite treatment programs, aboveground and underground storage tank programs, Hazardous Materials Management and Business Plans and Inventory Statements, and the Risk Management and Prevention Program. (The CUPA is generally a part of the county or city Fire Department or Environmental Health Department.)

Chert: Sedimentary rock consisting of silica; commonly forms in deep marine waters.

Closure: The act of closing a hazardous waste management facility or hazardous waste management unit pursuant to the requirements of Chapters 14 and 15 of California Code of Regulations, Title 22, Division 4.5. In California, all hazardous waste Treatment, Storage, Disposal Facilities (TSDFs) as well as transfer facilities are required to prepare and submit closure plans.

CNEL (community noise equivalent level): The energy average of the A-weighted sound levels occurring during a 24 hour period with 5 decibels (dB) added to the A-weighted sound levels

occurring between 7:00 p.m. and 10:00 p.m. and 10 dB added to the A-weighted sound levels occurring between 10:00 p.m. and 7:00 a.m.

Conditionally Exempt Small Quantity Hazardous Waste Generator: Conditionally Exempt Small Quantity Generators (CESQG) according to RCRA Subtitle C and California Health and Safety Code Section 25218.1 generate 100 kilograms or less per month of hazardous waste, or 1 kilogram or less per month of acutely hazardous waste.

Corrective Action: Investigation and cleanup activities at hazardous waste facilities that received a permit or were eligible for a permit to treat, store, dispose and/or transfer hazardous waste, under the federal Resource Conservation and Recovery Act (RCRA) or State authority.

Cortese List: The Hazardous Waste and Substances (Cortese) List is a planning document used by the state, local agencies and developers to comply with the California Environmental Quality Act (CEQA) requirements in providing information about the location of hazardous materials release facilities/sites. Government Code section 65962.5 requires the California Environmental Protection Agency (Cal/EPA) to develop at least annually an updated Cortese List. DTSC is responsible for a portion of the information contained in the Cortese List. Other state and local government agencies are required to provide additional hazardous material release information for the Cortese List.

dB (decibel): A unit for measuring the amplitude of a sound, equal to twenty (20) times the logarithm to the ratio of the sound measured to the reference pressure, which is 20 micropascals. A unit-less measure of sound on a logarithmic scale, which indicates the squared ratio of sound pressure amplitude to a reference sound pressure amplitude. The reference pressure is 20 micro-pascals.

dBA (A-weighted decibel): The sound level in decibels as measured on a sound level meter using the A-weighting network. An overall frequency-weighted sound level in decibels that approximates the frequency response of the human ear.

Dextral: A fault whose slip is primarily horizontal, with the opposite side of the fault moving to the right relative to the observer.

Earthquake: Groundshaking that results from rupture along a fault (see also Groundshaking, below).

Fault: A fracture in earth materials along which displacement (slip) has occurred.

Floodplain: Any land area susceptible to being inundated by floodwaters from any source.

Geothermal: Related to heat sources within the earth.

Groundshaking: Shaking of the ground surface associated with the release of energy during an earthquake (see Earthquake, above). Groundshaking is most intense at the earthquake epicenter (the point on the earth's surface above the earthquake focus, where rupture begins); in general, ground shaking decreases with increasing distance from the epicenter. The nature of subsurface materials also influences the strength and duration of ground shaking in an earthquake. Groundshaking is described in two ways: as a fraction of the acceleration of gravity (g) or in terms of the Modified Mercalli scale, which is a more descriptive method involving 12 levels of intensity denoted by Roman numerals. Modified Mercalli intensities range from I (shaking that is not felt) to XII (total damage).

Groundwater: Water below the ground surface, contained in permeable subsurface soils, sediments, or rocks.

Groundwater Basin: the aboveground area from which water drains to an underground aqui-

Hazardous Materials: substances or combination of substances which, because of their quantity, concentration, or physical, chemical, or infectious characteristics, may either (1) cause, or significantly contribute to, an increase in mortality or an increase in serious irreversible, or incapacitating reversible, illness; or (2) pose a substantial present or potential hazard to human health or environment when improperly treated, stored, transported or disposed of or otherwise managed (California Code of Regulations, Title 22, Section 66260.10).

Hazardous Materials Business Plans: California requires submittal of a hazardous materials business plan program (HMBP) to CUPAs to describe owner/operator information, chemical inventories, and emergency response plan for all businesses handling hazardous materials in amounts equal to or greater than 55 gallons for a liquid, 500 pounds for a solid, or 200 cubic feet at standard temperature and pressure of a compressed gas. The plans make publicly available information on hazardous materials being handled at businesses in the community, provide information to emergency responders on what hazardous materials are handled at a facility, and provide training to employees in how to handle a release or threatened release of hazardous materials at a facility. Holocene: Generally refers to last 10,000 years of geologic time; as defined by the State of California under the Alquist-Priolo Earthquake Fault Zoning Act, refers to the last 11,000 years.

Invasive: Non-native plants or animals that affect the habitats where they occur economically, environmentally, or ecologically.

Ldn (day-night level): The energy average of the A-weighted sound levels occurring during a 24-hour period, with 10 dB added to the A-weighted sound levels occurring between 10:00 p.m. and 7:00 a.m. Ldn and CNEL values rarely differ by more than 1 dB.

Leq (equivalent sound level): The equivalent steady-state sound level that, in a stated period of time, would contain the same acoustical energy.

Large Quantity Hazardous Waste Generator: Large Quantity Generators (LQG) according to RCRA Subtitle C and California Health and Safety Code Section 25218.1 generate 1,000 kilograms per month or more of hazardous waste, or more than 1 kilogram per month of acutely hazardous waste.

Liquefaction: Phenomenon in which unconsolidated materials (soil or sediment) lose cohesion and behave as a liquid, typically as a result of earthquake shaking. Liquefaction typically occurs in sandy materials that are saturated with groundwater, and is restricted to the upper 50 feet below ground surface. Liquefaction poses a hazard to structures (hence to life and safety) because liquefied materials lose their strength and may become unable to support structures built on them. This can result in severe structural damage, particularly in poorly designed or constructed structures.

Loam: A rich, friable (crumbly), permeable soil that consists of a mixture of clay, silt, sand, and organic material.

Magnitude: The "size" of an earthquake. Commonly used scales for earthquake magnitude include Richter magnitude and moment magnitude. The Richter magnitude scale is based on the degree of ground motion experienced as a result of the first seismic waves to affect an area. The moment magnitude scale relies on an event's seismic moment, a measure of earthquake

strength as a function of the extent (area) of fault rupture, the average displacement or slip on the ruptured surface, and the rigidity of the rock materials ruptured.

Minerals: Under California Statute (Public Resources Code §2005), refers to any naturally occurring chemical element or compound, or groups of elements and compounds, formed from inorganic processes and organic substances, including, but not limited to, coal, peat, and bituminous rock, but excluding geothermal resources, natural gas, and petroleum.

Miocene: The epoch of geologic time between about 23 million years ago and about 5 million years ago.

National Priorities List: Indicates whether the site is listed on the federal "Superfund" National Priorities List (NPL). The list of sites is developed and maintained by U.S. EPA, which typically has primary regulatory oversight for the sites listed on the NPL. Designations under this listing include: not listed; proposed to be listed; listed; or delisted. U.S. EPA delists a site from the NPL when all cleanup activities are certified as complete.

Noise contours: Lines drawn around a noise source indicating equal levels of noise exposure. CNEL and Ldn are the metrics used in this document to describe annoyance due to noise and to establish land use planning criteria for noise.

Noise sensitive land uses: These land uses include, but are not necessarily limited to, schools, hospitals, rest homes, long-term care facilities, mental care facilities, residential uses, places of worship, libraries, and passive recreation areas.

Overdraft: a groundwater condition in which outflows (usually, well withdrawals) exceed in-

Parent rock: The bedrock from which sediment or soil is formed by processes of weathering and physical erosion.

Peak load: The maximum power requirement of a system at a given time, or the amount of power required to supply customers at times when need is greatest.

Permitted: A facility that was required to obtain a permit or has received a hazardous waste facility permit from DTSC or U.S. EPA. Note that facilities may not require RCRA permits but may be subject to the more stringent DTSC permit requirements.

Pleistocene: The epoch of geologic time between about 1.6 million years ago and about 10,000 years ago. The first portion of the Quaternary period.

Potentially active: As defined by the State of California, a fault that shows evidence of motion during Pleistocene time (1.6 million-11,000 years ago). The state no longer zones or regulates construction along potentially active faults.

Quaternary: The period of geologic time beginning about 1.6 million years ago and continuing up through the present. Subdivided into the Pleistocene and Holocene (or Recent) epochs.

Recent: When capitalized, refers to the Holocene Epoch (about the last 10,000-11,000 years of geologic time; see Holocene above).

Recharge: the replenishment of water into a groundwater basin.

Recurrence interval: The time lapse between earthquakes on a fault or fault system. The magnitude the earthquakes a fault generates, and the recurrence interval between them, are two of the key factors in evaluating the seismic risk associated with the fault.

Reverse: Describes a fault whose movement has a substantial vertical component, pushing materials above an inclined fault plane upward.

Riparian: Associated with riverbank or streambank areas; describes the habitat corridor along the banks of a stream or river.

Riverine: Associated with a river or stream.

Ruderal: Describes habitats that are highly disturbed and as a result are dominated by nonnative species.

Sandstone: Sedimentary rock composed primarily of sand.

Sedimentary: Rocks formed when unconsolidated sediments are consolidated and hardened by increased pressure, temperature, and chemical activity that results from burial.

Seismically induced landslide: A landslide triggered by earthquake shaking.

Slip: Movement on a fault.

Small Quantity Hazardous Waste Generator: Small Quantity Generators (SQG) according to RCRA Subtitle C and California Health and Safety Code Section 25218.1 generate more than 100 kilograms, but less than 1,000 kilograms, of hazardous waste per month.

Special-status: Refers to species that are (1) listed or candidates for listing under the federal and/or state Endangered Species Acts, (2) identified as Species of Special Concern by the State of California, (3) protected under official conservation programs, (4) considered sensitive under the California Environmental Quality Act, (5) designated by legislation as requiring protection (also applies to habitats). Legal protection for special-status species varies widely, from the relatively comprehensive protection extended to listed threatened and endangered species to species that have no legal status at present. The United States Fish and Wildlife Service (USFWS), California Department of Fish and Game (DFG), local agencies, and special interest groups such as the California Native Plant Society (CNPS) publish watch lists of declining species; these lists often describe the general nature and perceived severity of the decline. In addition, recently published findings and preliminary results of ongoing research provide a basis for consideration of species that are candidates for state and/or federal listing. Finally, species that are clearly not rare or threatened statewide or regionally, but whose local populations are sparse, rapidly dwindling or otherwise unstable, may be considered to be of "local" interest.

Spill Prevention Control and Countermeasures (SPCC) Plan: SPCC plans are required to be submitted in California by owners/operators of facilities with aboveground storage tank (AST) capacity for petroleum greater than 1,320 gallons on site. (California H&SC, Chapter 6.67, Section 25270.3). SPCC plans describe the facility layout; the materials maintained; procedures for security, inspection, and handling to minimize chance of release; and procedures to respond, report, and cleanup releases to mitigate impact of releases according to U.S. Code of Federal Regulations, Title 40, Part 112 requirements.

State Response: Identifies confirmed release sites where DTSC is involved in remediation, either in a lead or oversight capacity. These confirmed release sites are generally high-priority and high potential risk.

Strike-slip: Describes a fault whose movement is primarily horizontal.

Subsidence: sinking of the ground surface due; may be caused by groundwater overdraft.

SANTA CLARA GENERAL PLAN AND ZONING UPDATE

Surface fault rupture: Rupture, breakage, or disruption at the ground surface as a result of movement (slip) along an active fault.

Tertiary: The period of geologic time between about 65 million and 1.6 million years ago. The first portion of the Cenozoic era.

Treatment, Storage, and Disposal Facility (TSDF): Hazardous Waste Facilities that treat, store, and/or dispose hazardous waste.

Ultramafic: Refers to igneous rocks contain abundant iron and/or magnesium, and very little silica.

Underground Storage Tank: any one or combination of tanks, including pipes and connections, used for the storage of hazardous substances with at least 10 percent of tank and piping volume located below ground surface (Cal. Code Regs. Title 23, Division 3, Chapter 16, Underground Tank Regulations)

Voluntary Cleanup Program: A DTSC program that allows motivated parties who are able to fund the evaluation, investigation, cleanup, and DTSC's oversight to move ahead at their own pace to investigate and remediate their sites.

Watershed: the area or region bounded by geographic divides and ultimately draining to a particular waterway or body of water.